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AMERICAN JOURNAL OF PHARMACY.

JANUARY, 1868.

ECONOMY IN THE USE OF ALCOHOL IN PERCOLATION.

On the preparation and use of Resin of Podophyllum.

By Edward R. Squibb, M. D.

The following paper is an addition to the series published during the past few years, as researches upon the process of percolation as applicable to practical pharmacy, and with especial reference to economy in the use of alcohol; and it adds one more typical drug to those which have been specially and individually investigated in this direction.

The officinal (U. S. P.) formula for Resin of Podophyllum* is objectionable,—first, because the use of muriatic acid in the precipitation is omitted; second, because a great excess of alcohol is directed; and third, because details which are of primary importance to the production of a good medicinal preparation are wanting.*

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* It seems unfortunate that those whose aim should be to give accuracy and precision to matters connected with medical science and art should so commonly refuse to this substance its proper and correct name, and adhere to the inaccurate and otherwise objectionable name of Podophillin, and this latter name is particularly objectionable and vulgar when pronounced with the accent on the final syllable. Beside, this name and its peculiar pronunciation belong where they originated, namely, to a substance of an almost proprietary character as made, sold and used by the sect of so-called "Eclectics," by processes not publicly known, and probably differing in the hands of different makers. Those accustomed to, and desiring to use this article are quite right in adhering to its name and the pronunciation of it, but those who would use the officinal substance had better use the officinal title. The termination *in* has long been applied to certain proximate principles of a neuter character and

The later officinal process of the new British Pharmacopœia is perhaps even more objectionable; first, from the excessive use of hydrochloric acid; second, from the use of coarse powder; third, from the excessive use of rectified spirit; fourth, from directing the product to be dried in a stove; and fifth, from a want of definite detail, and a peculiar involved and inverted style, which requires analysis in order to be understood, and is then neither definite nor clear.

These criticisms upon the only two officinal formulas for this substance were based upon a general experience in its preparation on the large scale, and in order to give them force and applicability on the scale of the Pharmacopœias, a number of experiments were carefully made, the most important results of which may be summed up as follows:

The first series proved that a given lot of about 200 pounds of the root contained accurately 4·1 per cent. of the resin, when carefully and thoroughly exhausted.

The second series proved that exhaustion was always difficult and generally imperfect with a coarse powder; and that the finer the powder, the more easy, the more perfect, and consequently the more economical was the exhaustion.

The third series proved that the resin precipitated by water only, without acid, could not be separated at all without heat,

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was applied to this and other substances by the Eclectics through ignorance of its true nature. It is a resin proper, and its analogues are the resins of scammony, jalap, etc., and there seems no good reason for miscalling it by an incorrect name which has attained an equivocal popularity, and the common pronunciation of which is so vulgar and inelegant.

* This want of details, which are often as indispensable to practical application as the quantities are, is a serious objection to many, if not to most of the processes of the U. S. Pharmacopœia. The great advantages of brevity and condensation are often obtained at the expense of utility in practical application.

and that heating so changed the physical properties of the resin as to prevent its being recognized by any known description.

The fourth series proved that the use of too much acid in the precipitation rendered the product granular, heavy and moist, dark in color, and diminished in quantity.

The fifth series proved the useful practical limits of acidulating the water for precipitation to be not less than ten minims, nor more than forty minims to each pint of water. That three pints of acidulated water was sufficient for each 7680 grains of powder; and that the product cannot be dried at a temperature much above 90° F. without risk of becoming hard and discolored, but that below that temperature it uniformly retains its light friable condition and its light color.

The sixth series determined the progress and rate of exhaustion in percolating a very fine powder. The fact that the resin was the only purgative portion of the root was proved by repeatedly swallowing boluses of the extract deprived of the resin only, in quantities increased up to 60 grains at a dose. And the circumstance that such doses were continued through two days without discoverable effect of any kind, leads to the inference that this extract is inert, like the similar extract of jalap. Then, as the resin is easily and perfectly precipitable, the powder offered an excellent type for determining in a very practical and useful way the effect of percolation in exhausting the powder of its resin, and of its extractive matter, and of comparing the progress of the exhaustion in relation to these two constituents of the product. Both the resin and the extractive matter are very soluble in the menstruum, and apparently equally so; and as the association of the two in the root must be very close, it might be expected that the alcohol would extract the two together in their natural association,—that is, that every particle of extract, from first to last, would contain its corresponding proportion of the resin. This, however, is not the case, the resin being extracted far more rapidly than the inert extractive matter; and this remarkable circumstance is of great interest and importance in its bearing upon percolation in general, and particularly where alkaloids are to be extracted. In the experiments recently published, wherein the cinchona alkaloids were determined in the successive portions of percolate, the determinations were more difficult and less accurate, and the results were therefore less reliable; and beside, the extractive matter there is well known to be useful, and not inert. This decisive confirmation of the general results obtained with the cinchonas is important, and as far as Cinchona and Podophyllum may be safely accepted as types or representatives of classes of drugs, the results may be considered as established for percolation in general. It is a remarkable circumstance, and very instructive in relation to percolation in general, that with powders of the same degree of fineness, taken in the same quantities, managed in the same way by the same hands in the same apparatus, and with the same menstruum, Cinchona requires four times as much menstruum and four times as much time as Podophyllum to attain the same degree of practical exhaustion. In this respect, as well as in others, it is interesting to compare the tables given of the percolates of the two substances.

The pair of percolations, given in the table on page 5, are selected from three which compose this series, as being very successful and accurate, and well sustained by others which preceded them. The same powder, percolater, menstruum and management was used with both, as well as the same measuring flasks, etc., and pains was taken to avoid all sources of error which previous experience had detected, and the drying before a final weighing, which is a fruitful source of error in all such researches, was continued for ten days. The table, it is hoped, will sufficiently explain itself, but the attempt to distinguish, in a column of remarks, the difference in the appearance of the different portions of resin and extract, is unsuccessful, except in showing that there was a marked difference.

The difference in the successive portions of resin precipitated was not in appearance only, but also in physiological effect when taken. It having been first proved that one-fourth of a grain of the resin as obtained altogether, by a previous process, when taken at a definite hour of the evening, with due regard to condition, diet, exercise, etc., would produce a distinct aperient or laxative effect on the following morning, the filter containing the

Sixteen troyounces, or 7680 *grains of* PODOPHYLLUM, *or* MAY-APPLE ROOT, *percolated with alcohol, s. g.* 0·835.

Proportion of Resin, and of alcoholic extract, yielded by successive portions of the percolate.

PORTION OF THE PERCOLATE.	YIELD OF DRY RESIN.			YIELD OF DRY ALCOHOLIC EXTRACT.		
	Yield in grains.	Percentage of the entire yield.	Remarks.	Yield in grains.	Percentage of the entire yield.	Remarks.
1st four fluidounces	192·8	61·755	Yellowish, with green tinge.	326·9	41·765	Rich brown, resinous.
2d " "	82·8	26·521	" "	174·4	22·281	" "
3d " "	25·2	8·071	Leaden white, or greyish.	82·7	10·566	" less resinous
4th " "	4·4	1·409	Yellowish brown, darker.	53·8	6·873	" tougher.
5th " "	2·8	·900	" " lighter,	40·5	5·174	" "
6th " "	2·0	·640	and this, with all the remaining portions, rises to the surface of the mother water.	37·8	4·837	Lighter brown, tougher
7th " "	1·5	·480		33·2	4·241	" " "
8th " "	0·7	·224		33·4	4·267	" " tough.
	312·2	100·000		782·7	100·004	
1st half-pint	275·6	88·276		501·3	64·046	
1st twelve fluidounces	300·8	96·347		584·0	74·618	
1st pint	305·2	97·756		637·8	81·485	
1st twenty fluidounces	308·0	98·656		678·3	86·659	
1st pint and a-half	310·0	99·296		716·1	91·496	
1st pint and three-fourths	311·5	99·776		749·3	95·737	

seven-tenths of a grain of resin precipitated from the 8th portion of the percolate, was swallowed under the same conditions.

The effect on the following day was but little, if at all greater than from the fourth of a grain of the unseparated or normal resin. Then, after an interval of more than two months to allow the effects to pass off entirely, the filter containing the one and five-tenths grains of resin from the 7th portion of the percolate was swallowed under the same conditions as before. The effect of this dose was more than aperient or laxative, but was only moderately purgative, commencing its action no earlier than the other doses, and ending about twenty-nine hours after the taking. This effect was estimated as about three times that of the former filter, or at most four times the effect of the fourth of a grain of unseparated resin. As far as these experiments can be relied on, then, they tend to show that the purgative quality of the resin diminishes more rapidly than the quantity, the next to the last portion requiring six times the quantity to produce four times the effect, and the last portion requiring nearly three times the quantity to produce the same effect, as the fourth of a grain of the normal resin.

Thus, in the progress of the percolation, whilst the resin diminishes very rapidly in its relation of ratio to the extract, it also diminishes rapidly in medicinal effect for a given quantity, so that it is doubtful whether that obtained after the first pint be worth the time and trouble of extraction. If the cost of menstruum be admitted into the account, however, it becomes altogether unimportant. It follows, from these considerations, that the formula for the officinal extract of Podophyllum, like that for the corresponding extract of Jalap, is very wasteful in menstruum and in time, and yields a product encumbered with much useless matter.

The seventh and final series in the experiments upon Podophyllum was undertaken to determine the details of a proper working formula, which should yield a uniform and good product with the greatest economy, convenience and ease, in the hands of those not specially educated to it by practice; and the results are given in the following formula:

Take of Podophyllum, in very fine powder, forty-eight troyounces,
Alcohol, five pints,
Muriatic acid, two fluidrachms,
Water, a sufficient quantity.

Divide the powdered Podophyllum into three portions,—the first of twenty-four, the second of fourteen, and the third of ten troyounces,—and repercolate them as follows:

Mix the first portion into a smooth uniform magma with two pints of the alcohol, cover the mixture closely, and set it aside for twelve hours. Then stir it well, pour it into a ten-inch funnel properly arranged for percolation,* cover the surface with a disk of filtering paper, pour on it two pints of the alcohol, and cover the funnel closely. When twenty-two fluidounces of percolate shall have passed, mix this with the second portion of the powder into a smooth and uniform magma, cover it closely, and allow it to stand twelve hours. Then stir it well, pour it into an eight-inch funnel arranged for percolation, cover the surface with a disk of filtering paper, and pour on it the percolate from the first portion. When sixteen fluidounces of percolate shall have passed from this second portion of the powder, mix it with the third and last portion of the powder into a smooth and uniform magma, cover it closely, and allow it to stand twelve hours. Then stir it well, pour it into an eight-inch funnel arranged for percolation, cover the surface with a disk of filtering paper, and, keeping the funnel covered during the intervals, pour on it the percolate from the second portion, as it is required.

When the last of the alcohol shall have disappeared from the surface of the first portion of the powder, pour water into the funnel, and continue the percolation with water until three pints and ten fluidounces of percolate shall have been received from this portion, and poured on the second portion. When the last of this percolate shall have disappeared from the surface of the second portion of the powder, pour on eight fluidounces of the alcohol, and when this shall have also disappeared, pour on water, and continue the percolation with water until three and a half pints of percolate shall have been received from this second portion of the powder, and poured on the third portion.

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* See paper on the Pharmacy of the Cinchonas, page 410, vol. xxxix.

When the last of this percolate shall have disappeared from the surface of the third and last portion of the powder, pour on the remaining eight fluidounces of the alcohol; and when this shall have also disappeared, pour on water, and continue the percolation with water until three pints and six fluidounces of percolate shall have been received from this third portion of the powder. Pass the percolates from one funnel to the next, in the order in which they are received, in portions of eight or ten fluidounces, waiting after each addition until that portion passes into the powder, before adding the next.

Distil the final percolate, and recover the alcohol from it by means of a water-bath. Add to the residue in the still three fluidounces of water, heat the mixture, stir it well, transfer it to a proper vessel marked to twelve fluidounces, and make it up to that measure from the recovered alcohol, using a portion of the alcohol so taken to rinse out the still, and stir the whole together.

Then add the Muriatic acid to seven pints of water contained in a proper precipitating vessel, stir the mixture briskly, and pour the diluted extract into the acidulated water gradually during the agitation. Allow the whole to settle during two hours or more, pour off the clear supernatant liquid, replace it with water, stir well and again settle and decant the washings. Transfer the precipitate to a twelve inch filter in a funnel, and when it has drained, pour on a pint of water in two portions, and when it has again drained, transfer the filter and contents to a porous tile, or to a piece of bibulous paper laid upon a folded napkin. Finally dry the precipitate at a temperature not exceeding 90° F. = 33° C. and rub it to powder. The quantity obtained will vary with the quality of the root, between three and a half and five and a half per cent. for the ordinary commercial grades.

The resin is a very light mobile powder, of a light dingy yellow, or brownish yellow color with a tinge of green, varying somewhat in this green tinge. It has the peculiar odor of the root, and a bitter, mawkish taste, the bitterness of which is rather slowly developed and is persistent.

The process of repercolation is very well adapted to this powder, and, when carefully and skillfully performed, saves at least one-third of the alcohol otherwise required. The details of this process given here are such as especially apply to this powder, and here again the slowness of the process is indispensable to success. Indeed, the farther the writer's experience extends upon this subject of percolation and repercolation, the more evidence is obtained as to the primary importance of time in effecting the exhaustion of the powders. Nine or ten days is required for the proper performance of this repercolation, and the difficulty of avoiding loss of alcohol by evaporation during this prolonged period is a serious objection to the process.

When the alcohol has nearly ceased to come over, the extract in the still measures five fluidounces, the water added brings this measure up to about eight fluidounces, and the additional alcohol brings this up to twelve fluidounces. There is therefore about six fluidounces of alcohol in the extract when poured in for precipitation, and this added to the two and a half pints received, leaves the loss by evaporation to be estimated at two pints or more of the five. By special apparatus and particular care this can be much reduced, but the aim here is to present the process as it would be conducted in common practice.

The addition of water to the concentrated extract in the still is useful, first, by rendering the extract more liquid, and further, by dissolving the large portion which is soluble in water to render it more easily separable from the resin in the precipitation. The addition of this water precipitates much of the resin and renders the extract muddy, even when heated, but the after addition of the alcohol makes the whole a perfect and clear solution as it should be before being poured into the acidulated water. This pouring in should be slow, and the stirring active, to avoid clotting of the precipitate. With the proportion of acid indicated, the precipitate settles out promptly, so that in two hours more than one half of the mother water may be poured off and thrown away. Another water put on and decanted in the same way, and then a displacement washing in the filter are considered quite sufficient. The resin is rather nicer and lighter the slower it is dried, and when it does not mould is perhaps best dried upon plates shielded from dust, at ordinary temperatures. The mode of drying has much to do with the color and lightness of the powder, more even than the quantity of water used in the precipitation. The washing also has much to do with the character of the powder, for if much of the gummy extractive matter be left in, it will dry by contracting and will become heavy and dense, difficult to rub up, and yield a heavy powder of less therapeutic value, because more difficult to incorporate intimately with corrigents and excipients.

This resin is neither a very active nor a very prompt cathartic in any reasonable dose, but on the contrary is rather slow though certain. It prominently affects the upper portion of the alimentary canal, as aloes does the lower portion, and upon this prominent characteristic its value as a purgative chiefly depends.

To this circumstance, and perhaps to this alone, it owes its reputation as a chologogue, its action, by continuity and contiguity, being extended to the liver and gall bladder. Hence it becomes important to give it in such a form as to secure, beyond a doubt, its solubility in the stomach. With many persons its operation is harsh and unpleasant, and the effects and results are unsatisfactory; but in a large majority of cases, when used with skill and judgment, it becomes a valuable agent. Its therapeutic properties have as yet been imperfectly studied, and its uses are undeveloped. A careful, industrious and earnest observer, is however, now at work with it, and the paper of Dr. Caleb Green, of Homer, N. Y., will doubtless add to the present stock of knowledge of this substance. It appears to be best adapted to the purposes of a slow aperient, or at least such is the character it has gained among practitioners in this neighborhood, and when properly guarded and corrected, and given in small doses adjusted to a definite and well understood condition and object, it generally grows in favor with those who use it, so that few physicians who learn its peculiarities and how to use it, ever give it up.

The mode of administration appears to be of much importance. Given alone or unguarded it seems to shock the mucous linings, and to produce nausea and griping of a peculiar kind, confined to the upper portion of the intestines. But when properly comminuted and shielded, its operation is generally without sensation. Of a resin prepared as above described, one-fourth of a grain is a sufficient ordinary dose for an adult; and for the development of its best uses it appears better to repeat than to double this quantity. In view of its peculiar qualities and effects, the writer some two years ago, contrived the following formula for a pill, which, under the name of Podophyllum Pills, has become quite popular and useful, and perhaps deserving of publication.

Take of Resin of Podophyllum, thirty-six grains.

Alcoholic Extract of Belladonna, eighteen grains.

(Or Alcoholic Extract of Hyoscyamus, one hundred and forty-four grains.)

Powdered Capsicum, one hundred and forty-four grains.

Powdered Sugar of Milk, one hundred and forty-four grains.

Powdered Acacia, thirty-six grains.

Glycerin, forty minims.

Syrup, a sufficient quantity.

Put the Resin and Sugar of Milk into a mortar of large size and triturate them together very thoroughly. Then add the Alcoholic Extract of Belladonna, and again triturate very thoroughly. Then add the powdered Capsicum and Acacia and repeat the thorough and prolonged trituration. Finally add the Glycerin, and Syrup enough to form a mass of proper pilular consistence, and beat the whole well together. Divide this into one hundred and forty-four pills, dry these by exposure at ordinary temperatures until just hard enough to retain their form, and then keep them in a well stopped bottle to prevent further drying.

The Oleo-resin or Fluid Extract of Capsicum may be substituted for the powder if desired, and in acid conditions of the stomach, or where it is desired to insure a ready solution of the resin, a small addition of Exsiccated Carbonate of Soda may be made, say one fourth of a grain in each pill. Alcoholic Extract of Belladonna seems to be a more certain and effective corrigent than the Hyoscyamus, and is required in much smaller quantity. Both have been used with success, but the best effects are said to be obtained from the first. Good Capsicum in very fine powder is one of the best and strongest of the aromatics, and hence its use as the stimulant corrigent against nausea and griping. It could hardly be substituted without increase of bulk, or loss in effect, and yet is liable to make the pill burn the fauces and throat in swallowing. The Sugar of Milk as an excipient is chosen for its hardness and slow solubility, to divide minutely, cover and sheathe the resin. It may be substituted by sulphate of potassa with equal effect, and if either be taken in crystals, and rubbed with the resin until reduced to a very fine powder, the effect, as in making Dover's Powder, is so much the better. The Acacia is used to give adhesiveness to the mass, and the Glycerin to prevent the pills from becoming hard or less soluble. This is a very useful addition to all pill masses, and particularly so to those containing resinous substances. The repeated and prolonged trituration directed is regarded as a very important matter. All harsh, drastic, or active substances have their harshness and acridity very much diminished by such management, and there is some reason for believing that this pill would be a different thing without this management, and that the more time and labor bestowed upon the material in this way the better.

These pills are rarely if ever well used as a purgative or cathartic proper, and are best and perhaps only adapted to useas an aperient and alterative medicine. One pill taken at night will usually insure the morning evacuation if its occurrence be doubtful, or will increase it and render it more pultaceous and easier. If the pill be without effect, or produce too slight an effect, another may be taken in the morning. This will commonly ensure a pultaceous though not copious evacuation before evening, often without sensation, but generally with occasional slight uneasiness, but with nothing like active purgation. In the ordinary and perhaps the best use of this pill to overcome constipation, the effect, or want of effect from the first dose may be disregarded, and no more be taken until the next evening. The second evening dose is pretty sure to produce an evacuation on the following morning, and this of an improved character. A third pill on the third evening still improves the effect, and often so far re-establishes a habit of daily evacuations that it becomes proper to omit one evening and renew the dose on the fifth. Next, two evenings may be omitted, and next a pill may be taken twice a week, then once a week, and so on until the habit of constipation is corrected, and the habit of daily morning evacuation re-established. In more obstinate cases, two or even three pills in the twenty-four hours may be required, and occasionally these give as little inconvenience as when only one is taken. More commonly, however, they produce occasional uneasiness and discomfort, often amounting to what many describe as pain, and this at intervals throughout the day. In an obstinate constipation, or one of some days duration, they will very rarely produce evacuation without discomfort or even positive pain, no matter how well they may be managed. But this is incident to the condition of body, and is not chargeable to the medicine. After the first effect is obtained a slow and careful use of them will often complete the cure.

When used in some such way as that indicated, this resin seems less liable than other purgatives to produce that reaction which tends to constipation after its use. Indeed, under favorable management there seems to be no tendency to this reaction, nor is the intestinal canal so emptied that days are required to fill it up to the normal condition in which natural evacuation can be expected.

In brief, therefore, the advantages of this resin are, first, that it acts upon the upper portion of the intestinal tract about as exclusively and as specifically as aloes does on the lower portion, and from this circumstance affects the liver, pancreas, etc., as aloes does the uterus, bladder, etc. It is therefore a chologogue as aloes is an emmenagogue, and probably in no other way. Second, it is slow and certain in its operation, and not exhausting. Third, it has little or no tendency to produce constipation after its use.

Its disadvantages are that it is often harsh, disagreeable and insufficient in its operation, and so peculiar that it is badly borne by a larger proportion of persons than other similar medicines. And, that for its proper use it requires more care and skill than most medicines, to avoid its bad qualities. When used in large doses as an active cathartic it will almost always cause great complaint, and very few physicians will continue to use it thus without acquiring a great prejudice against it; and such often lose the advantages of its more useful application in its proper sphere.

In combination with other purgatives it appears well adapted to replace Jalap, Scammony and Gamboge with advantage to the combinations, and it is in such combinations that it has been hitherto most commonly used, and perhaps with most advantage. Such combinations are, however, by no means favorable to an accurate knowledge of its peculiarities, either in effect or adaptation, and they tend to that polypharmacy which makes medication so uncertain and medical testimony upon therapeutic values so variable.

It is well worth while to caution those who handle Podophyllum in fine powder, and especially the resin, in rubbing up, making plls, etc., against getting the dust in the eyes. It is exceedingly irritant, worse than cantharides; and almost as bad as euphorbium ; and it not unfrequently happens to the writer, in handling it on the large scale, to have men laid up for two or three days at a time and suffer severe pain, but always thus far without permanent injury. Much care is always used to protect the eyes and to well wash the hands, etc, but yet they occasionally suffer, and in a recent instance the attack did not come on until 24 hours after the resin had been finished and put away. The hands most frequently convey the powder to the face and eyes, and the handling of dusty overhauls, or a brush, or some such matter, after the necessity for caution has been dismissed from the mind, will occasionally produce the effect.

In the foregoing paper the unsettled questions as to the constitution of this resin—as to the presence or absence of berberina when muriatic acid is used, and as to whether berberina plays an active part in the peculiar effects ascribed to Podophyllum—have been purposely avoided as being, in the present state of our knowledge of the substance, more curious than practically instructive. The writer feels sure that, for the present, in obtaining a uniform active resin from Podophyllum we have gone far enough, if not too far, until its qualities are better investigated, since a simple fluid-extract, or an alcoholic extract (not the officinal) would be perhaps better and safer preparations upon which to accumulate accurate knowledge of its effects.

Brooklyn, November 26th, 1867.

PULO ARMAGOZO (BITTER TREE OF TEXAS).

Brownsville, Texas, April 9th, 1867.

EDITOR OF AMERICAN JOURNAL OF PHARMACY:

Dear Sir,—For the past two or three years I have heard much regarding the efficacy of a shrub, or tree, known in this section by the Mexican name of "*Palo armagozo*" (bitter tree), in the treatment of chronic diarrhœa and dysentery. It was first brought to my notice by Hon. Judge Dougherty, a resident of this place, and who has used it with wonderful effect. He asserts that he has cured very many who have suffered from the above complaints for many years. It is given in infusion,—say one ounce to the pint.

I send you pieces of the stem and root, and would request that it be analyzed, and, should you think it of any value as a medicine, to publish it, so that all may know of it. I am unable to describe the tree, as I have never seen but the pieces sent you. I am assured that it can be procured in the greatest abundance. Both the stem and root are used. Should you be pleased to give the above request the attention I solicit, you would confer a great favor on Your Subscriber, J. L. PUTEGUAT.

[An explanatiun is due to the writer of this letter. It was not received by the Editor until his return from Europe, late in September.

The specimens alluded to in the letter consist of two pieces, each about a foot long, and an inch to an inch and a half in diameter; one, a section of the stem, with the remains of lateral branches, varying from a line to three lines in diameter. The wood, which is lemon-yellow colored, deepened by moisture, is covered with a gray-colored bark, less than half a line thick, with numerous lichens attached. Beneath the epidermis the bark is first brownish and then yellow, of a shade little different from the wood. The wood is close-grown, but not very dense. A cross section with a sharp knife exhibits radial lines and circles, with deep yellow resinous layers between. The bark is exceedingly bitter, reminding of quassia; the wood is very slightly, if at all bitter.

The specimen of root consists of a main or tap root, with a few lateral cylindrical rootlets, varying from one to two and a half lines in diameter. The root bark is somewhat thicker than that of the wood, and is equally if not more bitter. The ligneous part of the root is less dense, and full of comparatively large open pores, occupying the position of the resinous layers in the wood. It also possesses some bitterness.

A decoction of the root and wood had a very pale straw color, and quite a bitter taste. A hasty application of tests indicated the presence of starch in small quantity, but little gum, and no indication of berberina or other alkaloid; but the trial was not conducted with much care, owing to the incomplete state of the information relative to the plant. It is suggested that our correspondent pursue the inquiry until he can get leaves and flowers of the plant, and further information in regard to it, and forward them to us, when we will examine it more critically.—Ed. Amer. Jour. Pharm.]

ON LIQUOR MAGNESIÆ CITRATIS.

Boston, Sept. 14th, 1867.

To the Editor of the American Journal of Pharmacy:

Dear Sir—Having read several articles on citrate of magnesia in your Journal, and knowing how difficult it is to make the solution permanent, I will give you my formula, which I have used for the last twelve years; and I would like to have you try it:

℞. Magnesia calc., ℥ij.
Acid cit., ℥xss.
Aqua, Oij. ℥iss.

Dissolve the acid, then add the magnesia; let it stand until the magnesia is dissolved, then filter (to each bottle put in ℥iij. of the solution, with ℥ij. syr. simplex; fill with water); to each bottle 45 grains of bi-carb. potassa; cork tightly. The solution should be bottled as soon as it is made.

Yours, respectfully,
W. D. Atkinson, Jr.

[In accordance with the request of the writer, we have prepared this solution and, as we expected, find it too acid, though perhaps more agreeable to the taste than when more neutral. When tried it proved efficient. If lemon syrup flavoring were added it would be improved.—Editor Am. Jour. Pharm.]

NOTES OF TRAVEL IN EUROPE.

Rome, Italy, May 27th, 1867.

Prof. Maisch,—It is with a feeling allied to disappointment that I at last take up the pen to comply with the partial promise given in the May number, because the hurried process of travel which has occupied nearly all the time since leaving Liverpool, in order to reach Southern Italy before the warm season sets in, has altogether prevented any earnest and available inquiries of a nature interesting to pharmaceutists.*

A call on Mr. John Abrahams, of 86 Bold street, President of the Liverpool Chemists' Association, was courteously received, and the opportunity afforded to examine cursorily the very creditable collection in the museum of the Association. In passing through London, the museum and laboratory of the Pharmaceutical Society were visited. They are contained in a commodious building at the corner of Bloomsbury Square and Great Russell street. A large brass plate on the door informs that the "Pharmaceutical Society" centres there. The lower story is devoted chiefly to the museum, which is contained in four separate apartments: two to vegetable substances, one to mineral bodies and salts, and a small room to animal substances. All are contained in substantial mahogany cases, and the organic drugs arranged according to the natural system, as indicated on the exterior of the cases above as thalamifloræ, calycifloræ, carollifloræ, monoclamydeæ, petaloidæ, dicotylogenæ, glumaceæ, thallogenæ, acrogenæ, etc. The collection of rhubarb is quite extensive, embracing, besides the usual commercial varieties, a very complete set of specimens of English rhubarb in various forms, as Canton style,—large flat,—Dutch style, and cylindrical pieces, besides Himalayan rhubarb, trimmed and rough. The specimens of opium embrace the East Indian varieties, the Egyptian, Persian, Constantinopolitan, English, and probably French opium, though it was not seen. Sections of a manna tree, exhibiting the wound and exudation, and of nux vomica and other trees, were observed. Among the balsams are the liquidambar balsam of Guatemala, white balsam Peru, the fruits of "Myrospermum Pereiræ," very fine specimens of amygdaloid benzoin and guaiac resin, in tears. Several of the groups are well illustrated with the adulterations, and many of the roots and other parts are exhibited in their fresh state, as preserved in spirit, so as to give a better idea to students of their structure and form. In this way roots allied in form, but different in properties, like those of parsley and hemlock, and liable to substitution, are more easily distinguished and understood. An entire case is devoted to the cinchona barks (which have been largely contributed to by Dr. Pereira and Mr. Howard), with their principles and salts. Many of these specimens are of great interest for illustration, and have the initials of Pereira and of Howard upon their labels. The sennas are also abundantly illustrated.

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* Some apology is due to the readers of the Journal for introducing this letter so much out of time. Before leaving home, Prof. Maisch, who had kindly undertaken (and who so ably accomplished) the Editorial duties during our absence, was led to expect some aid in this form. After this letter was hastily written, during the week's sojourn in Rome, it was thrown aside as unworthy of the valuable space it would occupy, and now, after revision, appears mainly because more appropriate original matter has not presented.—Editor.

The second room contains the products of monocotyledonous and cryptogamous plants. Excellent collections of cardamoms, aloes, starches and sarsaparillas are found here, including nearly all the varieties known. To illustrate the fungi, models are shown, colored to represent the living plants. In the collection of animal substances is a stuffed musk deer, and a sturgeon,—the latter used to explain the subject of isinglass, and a great variety of substances of animal origin, including all that are officinal and many non-officinal, as bezoar, hyraceum, ambergris, coral, etc. The anatomy of the leech is represented by model, and the subjects of cantharis and cochineal by numerous specimens.

In the mineral room the finer chemicals and organic salts are exhibited in flat cases, the substances, when rare, being contained in shallow goblets covered with plate glass. There are several very good sets of models of crystals, of glass and wood, and skeleton crystals, and, in many instances, a salt is accompanied by a model of its crystal. There are many fine crystallizations of the mineral salts, and also a collection of coal-tar products. Various other objects connected with pharmacy, besides drugs, are seen, but we did not find a museum of apparatus and appliances, nor was there a collection of pharmaceutical preparations observed.

The lecture room is quite small, and will not accommodate more than one hundred students; it is amphitheatrical in arrangement. Nothing surprised us more than this evidence of the small number of students in the most populous city of the world. The library we did not get time even to glance over. The laboratory for practical instruction occupies the new upper story, built by the legacy of Mr. Bell. The room is well arranged for the purpose in view; the tables are placed around the exterior of the room as well as in the centre, and appear well adapted to the purposes in the details of each table or counter, and the general arrangements for heating, ventilation, weighing, etc. The laboratory was in operation at the time, a number of students being at work, but the director, Dr. Attfield, and his assistant, Mr. Tilden, afforded all the facilities for seeing the establishment that the short time permitted. I also had the pleasure of meeting Prof. Redwood, Prof. Bentley, and the very polite and attentive Secretary and Registrar of the Society, Mr. Bremridge, whose devotion to its interests is one of the best agencies at work in the advancement of the Society. Nearly always on the spot, he is ready to meet the numerous calls for information which so extensive a Society demands. Unfortunately, the season was past for the "Pharmaceutical Meetings," and no opportunity to be present on one of these occasions was afforded.

A brief call at the establishment of the late Jacob Bell, on Oxford street, introduced me to the acquaintance of Mr. Barnard, of the present firm,—

the Business Editor of the Pharmaceutical Journal. Mr. B. politely showed me their pharmaceutical laboratory, adjacent to the store,—the same formerly used by Mr. Bell. Much of the interest of this brief visit to London was due to the kind attention of my friend Mr. Daniel Hanbury, of Allen & Hanbury's, Plough Court,—the establishment noted as that of the late William Allen, F.R.S.

Being desirous of reaching Paris in time to meet friends going south, the many attractions of this "vast hive of humanity" were postponed until August, and, leaving on the 28th via Dieppe and Rouen, I arrived in that city on the 29th of April. During a stay of four days in the great metropolis, the leading objects of an architectural character were visited, and a day spent at the Exposition, which afforded much gratification, and gave an earnest of what may be expected on returning from Germany. When at the Garden of Plants, being near 6 Rue Censier, I called on the venerable Prof. Guibourt, with a letter from our mutual friend E. Durand, of Philadelphia. M. Guibourt was engaged in his garden, training his vines, and giving directions. He soon came in, and, on presenting my letter, he recognized in the superscription the handwriting of his friend Durand, and gave me a very cordial reception. M. Guibourt did not speak much English, and I speaking but little French, we met the difficulty by placing a sheet of paper between us, and held our interview in writing, each being able to read the written language of the other. M. Guibourt looks older than I had expected to see him, judging from the picture in our College of Pharmacy. In stature he is below the medium height, otherwise well built, rather stooping than erect, with a quick, vivacious eye. He lives very retired, not far from the hall of the Society of Pharmacy, and appears to be very industrious in his habits. My friend Alfred B. Taylor having sent by me a steel measure of length, the half of the unit of length of his octaval system, to be presented to the Pharmaceutical Congress, should the subject of weights and measures be considered, I gave it, with an explanatory volume, to M. Guibourt, who agreed to take charge of and present it in due course when the Congress should meet in August, on which occasion I hoped to meet him again.*

On the 4th of May we set out for the south, via Dijon and Lyons, passing up the valley of the Seine until this river became a rivulet, and down that of the Saone to Lyons and the Rhone, following the latter river to the Mediterranean at Marseilles. This long distance of nearly six hundred miles is passed by rail in about nineteen traveling hours, stopping half an hour at Dijon, half a day at Lyons, and half a day and a night at Nismes. We saw but little of the great centres of the Burgundy wine and the silk trade. Before reaching Dijon, the line of the road passes through the

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* It is hardly necessary to say that this pleasant anticipation was never realized, as the venerable savant died on the second day of the meeting of the Congress, at which he should have presided.

Coté d'or wine region, and a large portion of the soil is devoted to the grape. Here, as well as along the Rhone valley, the vines are planted about four feet apart each way, like Indian corn, and are trimmed back to a stump from six to twelve inches high; the entire soil being plowed up in the spring, before the vine shoots, giving a peculiar dotted appearance to the hill-sides as we passed them. The vignerons were busily engaged in placing stakes about four feet long beside each root, to support the fruit-bearing branches, which are tied to them, and kept cut back and thinned out. After passing Dijon the English walnut (*Juglans regia*) was seen in culture; but south of Lyons this tree is largely cultivated, especially near Grenoble, where its fruit is a staple. In descending the Rhone valley due south vegetation changes very perceptibly in its character in the course of one day's travel. The plantations of white mulberry, for the silk culture, became more abundant, and were just ready for feeding. We saw the women, with short ladders, gathering the leaves in bags and baskets, which is continued until the trees are stripped,—in which state they present a blighted aspect, as though the army worm had passed over them. The energies of the trees then throw out a new crop of leaves, and many cut back the shoots, and form a new head to the tree for the following year. But all are not thus cut back, some being allowed to branch and spread like apple trees. When they are headed in, the intervening soil is planted with grapes or other crops, and the whole kept plowed.

Before arriving at Avignon, the olive, the almond and fig trees begin to be seen, and at Tarrasçon and Nismes olive orchards are very numerous, and orchards of apricots in the most vigorous health are abundant; in fact, the delta of the Rhone south of Nismes and Tarrasçon, called the "isle de la Camargue," is exceedingly fruitful, and affords largely of olive oil, besides contributions of early fruit to the Paris market. The peculiar dull, pale tint of the evergreen foliage of the olive gives to the olive groves a melancholy aspect, strongly contrasted with the large shining deep green leaves of the fig, and the equally rich but varied foliage of the apricot. The neighborhood of Avignon is also noted for the culture of madder, though we were informed that this branch of industry had of late much decreased in that vicinity, owing to a diminished foreign demand. Madder was introduced into this neighborhood by a Persian called *Jean Althen*, to whom a bronze statue is erected on the ridge above the town. Some cantharides are also collected near here, and honey and olive oil are staples.

The Roman antiquities of the valley of the Rhone, especially those at Vienne, Tarrasçon, Arles and Nismes, are of great interest, and numerous middle-age remains exist, but are foreign to the subject of this letter. After leaving Tarrisçon, the road proceeds south to Arles, at the head of the delta, and then takes a south-easterly direction to Marseilles, passing the tunnel of La Nertha, nearly three miles long and thirty-three feet high, ventilated by twenty-two shafts; soon after which the Mediterranean is seen, with the vicinage of Marseilles in the distance; but another tunnel of 1500 feet is passed before entering the land-locked inlet on which Marseilles lies. The view of the city and harbor, after passing this tunnel, is very fine, with the church Notre Dame De la Garde crowning the eminence towards the sea, looking south-east.

Marseilles is the New York of France, and the centre of a large foreign trade. Our stay at this city was very brief, and no opportunity was afforded to look after the olive oil and castile soap industries. A walk along the quays offered many objects of interest; on the Quai de Napoleon, at the head of the harbor, various shell-fish and sea products were offered for sale, among them a species of zoophite, called a sea violet, which is edible, and tastes somewhat like an oyster. One of the most striking objects was wheat, which lay in great heaps directly on the quay, without shelter, with men engaged in cleansing it by means of wide shallow sieves, suspended like a scale pan from a support made by three poles. The operative, by a few dextrous motions, causes the sieve to do its office, and then tosses the contents on the heap. Certainly this primitive method indicates some lack of enterprize. Large quantities of olive oil in huge casks, much like those used here for lamp oil, were seen. This great staple is contributed partly by the neighboring coast trade, but more by Mediterranean commerce—Tunis, and doubtless Algiers contributing largely. Casks of madder, sacks of purging cassia, senna and various other drugs, piles of wine and oil jars, bales of cork wood and numerous other products are strewn along, either just landed, or about to be exported.

Our next stopping place was Nice, to which a railroad extends. The route along the Mediterranean possesses much interest; the sea is often in sight until Toulon is passed, when the road leaves the coast, proceeding north-east along the high ground on the left hand (N.W.) side of a wide and fertile valley, extensively given to the olive, and approaches in sight of the sea at Frejus, noted as the birth place of Roscius, the Roman actor, and where Napoleon landed from Elba.

In approaching Nice, we passed through Cannes, and within a few miles of Grasse, both celebrated for the salubrity of their climates, and for their industrial flower gardens, distilleries of perfumes and oils, and their manufacture of pomades. From these districts a large portion of the French trade in perfumes is supplied. All along the route, fig, mulberry, olive, and almond trees are abundant. Many olive trees were of great age, appearing like old apple trees with irregular contorted branches, trunks one to two feet in diameter, but the evergreen foliage is so entirely different in hue and shape, that they will never be mistaken for apple trees. As we passed along, the incipient flower stems were being developed, but many weeks must elapse before they bloom. Near Cannes our route lay near orange groves, which perfumed the air, and their fragrant blossoms could be seen peeping out from the rich foliage.

Nice is a spot in much favor with English invalids in winter, situated directly on the sea, and sheltered from the north by the outlying spurs of the Savoyese Alps. The public squares and walks are ornamented with the *date* and other species of the graceful palm and other exotics, which give a tropical character to the landscape, while numerous flowering shrubs, tastfully arranged in groups, add variety, beauty and perfume. A species of "medlar" (Mespilus * * *) is common here and in Italy, bearing a fruit about the size of a medium plum, when ripe of a bright yellow, and quite agreeable to the taste, especially acceptable when one is thirsty. Here, as in nearly every considerable city frequented by the English, there is an "English Pharmacy," where medicines prepared according to the British Pharmacopœia can be had, and prescriptions compounded in the English style. This not only shows the number of English travellers on the continent, but especially exhibits the national habit of taking medicines freely, a habit which we Americans inherit with t[illegible]thful legitimacy from the parent stock.

A ride to the top of the Chateau, a hill about 320 feet elevation, gave us a magnificent panorama of old and new Nice on the north and west, and the port of Nice and Villa Francha, on the east, whilst to the north, over and far beyond the adjacent mountain range, we obtained our first good view of the snow clad alps of Piedmont. The vicinity of the City of Nice is almost enveloped in foliage, largely the olive, intermingled in the numerous villas with tropical and sub-tropical trees in great variety. The Agave Americana grows luxuriantly in the open air, and is used in many hillside villas as a most effectual hedge plant for precipitous rocky ledges, where a little soil exists in the crevices to give its strong roots an opportunity to insinuate themselves. There are several distilleries of oils and waters and makers of perfumes here, and in returning from the Chateau we called at the laboratory of M. Marche, and were politely afforded an opportunity of inspecting some of the processes going on and the instruments used in others. Being early in the season, only orange flowers were under treatment; around several heaps of the blossoms just brought in from the suburban orange groves, women and girls were seated, busily picking out the green parts and impurities capable of influencing the oil of neroli and orange flower water unfavorably. They are then transferred to the tinned copper still which holds 100 kilogrammes of the flowers, (about 215 lbs). with a diaphragm below. In this establishment direct heat is used, which is true of the best factories at Cannes and Grasse, according to Mr. Hanbury. The process is continued from five to ten hours, according to the activity of the fire, and the product is about five ounces of oil of neroli and a large quantity of orange flower water which is fractioned, some being sold as first obtained, and some strengthened by cohobation. The apparatus for extracting the more delicate odors of the tuberose, jasmine, etc., not subjectable to distillation, by the process of enfleurage, as well as those for making pomades by infusion, were arranged around the laboratory, and the presses employed to separate the fats after they become sufficiently imbued with the perfume, were seen and examined.

In proceeding to Genoa, the traveller has a choice of routes—by steamer along the coast, or by *diligence* on the Cornéche road, a first class work of great excellence, carried along the base of the maritime Alps, a distance of 127 miles, (time 23 hours). My friends having chosen the former, I entered the coupé of the diligence at 8 o'clock, A. M., and proceeded by the latter route; the road ascends the east side of the valley of the Paillon river until the summit of the ridge is reached 2100 feet above the sea level. The view of Nice and its environs is beautiful in the extreme, and a near approach to many of the beautiful villas and gardens, gave an earnest of what might be seen by a longer opportunity. From this elevated point we could see the steamer, nearly opposite us, beyond the light-house, which did not leave its moorings for an hour after we started, so long had it taken to overcome this great ascent. The town of Monaca was in the distance, and the sea—quiet as a lakelet—spread out before us until it washed the African coast. The scenery along the road, which occupies at some points the site of the via Aurelia, has every possible variety, and the necessity of winding around the rocky spurs of the mountains, causes its course to vary to that of nearly every point of the compass. Towns, villages, walled cities, isolated castles, ancient ruins, together with a wonderful luxuriance of vegetation in many positions, keep the traveller constantly occupied. Many of the villages seem almost cut off from land communication, whilst a few have mountain paths to the interior by the passes above. Few are the acres of arable land, but the centuries of human industry expended along these rocky inlets, have carried the olive and the grape and the fig into every available nook and ledge where a little earth can be sustained by loose stones, until their roots bind all tightly together and repay the labor of the planter during long periods of growth and fruition; indeed, the olive seems adapted by the hand of Providence as the poor man's friend in such situations, and the care taken of the tree shows that the gift is appreciated. At Ventimiglia, a grove of lemon trees was seen, and at Brodighera the date-palm is quite abundant, in fact the Bresca family of this place have long enjoyed the priviledge of furnishing the palm leaves used in Rome in the holy week ceremonies, owing to the fact that one of their ancestors, during the raising of the great obelisk in front of St. Peters by Fontana, made the timely suggestion to wet the ropes to prevent their tension, at the risk of his life, as during the critical moments all the men were ordered to keep silent on pain of death.

The figs of Onaglia are noted for their excellence, and considerable olive oil of good quality is exported from here. At Albenga we caught a glimpse of the hoary head of Monte Viso, near the source of the Po, but night-fall coming on the remainder of our ride was unworthy of note, until passing Sestri, we soon entered the gates of the natal city of Columbus, and at 7 o'clock were united to our party.

It is difficult to pass by Genoa without dwelling upon its many objects of historical interest, or visible attractiveness, its narrow streets of palaces, marble quays, numerous churches, and antique structures of various kinds. The hotel occupied by us once belonged to the Knights of Malta, and from its watch tower, which yet exists, we obtained a goodly glimpse of city and harbor; but it must suffice to say that we saw three autograph letters of Columbus to the authorities of Genoa at the City-hall, and esteemed them well worth seeing, and also visited the monument to the great navigator, and saw the spot alleged to have been his birth-place. Before leaving we rode out to the Villa Pallavicini to see one of the best examples of ornamental Italian landscape gardening suited to a hillside. We were much gratified, but more especially with the grounds and trees. Among the latter was a cork oak (*Quercus suber*) three feet in diameter, with the bark well developed; a camphor tree (*Camphora officinarum*) two feet in diameter and thirty feet high; a flourishing specimen of bamboo, twenty feet high; sugar cane, bananas, an *Auricaria brazilliensis*, 30 feet high and a foot in diameter; besides many palms—all growing in the open air and soil. The grounds rise several hundred feet to a castellated structure, at the highest point, from which a superb view of the sea and the surroundings is obtained. There is an abundant supply of water brought in from the mountain in the rear, and to the complete command and the judicious use of this important element of fertility, by irrigation, is due the luxurious growth at a time when almost a drouth prevailed. The comparatively level grounds below the villa are devoted partly to an orange grove and flower garden, but mainly to the vine, which is grown on horizontal trellises. As we rode back to the "Croix de Malta," along the extremely dusty terminus of the Corneche road, we could but contrast the paradise we had just visited with the dust-covered foliage and parched aspect of vegetation along the route.

Leaving Genoa on the evening of the 11th of May, in the Italian steamer Principe Amedio, we reached Leghorn to breakfast. The steamer remaining until evening for mails afforded the opportunity to land and visit Pisa. After a hasty ride through Leghorn we called at the water-works to see an admirably arranged filtering reservoir, supplied by an aqueduct from Colognola, enclosed in a building supported partly on columns, standing in the reservoir. The clear crystal water is seen making its way through the gravel beneath as it flows from one apartment to the other previous to distribution. At 12 we set out by rail for Pisa, over a flat, marshy, partially wooded country, with occasional specimens of *Pinus ponderosa*, the seeds of which are used as food. Pisa is a walled city, and the terminus is just with the wall. As our time was limited to a few hours we gave them to the Duomo and its accessories, the Baptistery, the far-famed Campanile, or leaning tower, and the Campo Santo. To the architect the three first possess great interest, as grand works of his art, representing a type almost peculiar to this region; but, apart from the pleasure always derived from contemplating such objects, our interest in the Cathedral centred in the old hanging lamp or chandelier which centuries back gave to Galileo the idea of the pendulum; and it hangs there yet as it did then! Noble old man! Laborer for the intellectual emancipation not only of Italy but of his race. May the old lamp continue to hang and swing until, under her political Galileo, civil and religious emancipation shall extend through every city and hamlet from the Alpine wall of free Switzerland over the whole peninsula and islands!

We next ascended the tower. A stone dropped from the depressed side, the air being quiet, struck the earth nearly 14 feet from the base, about the alleged inclination of this remarkable structure, which evidently was once perpendicular, as indicated by the stairs and the base. It is 187 feet high and 52 feet in diameter, and seems as firmly bound together as when built. The Baptistery is remarkable for the echo under its dome, and when, rather heretically, we slowly repeated a couplet of one of our national airs, the effect was most strikingly exhibited. The Campo Santo is chiefly remarkable as a relic of the age of the Crusaders, when, under the influence of their initial idea, 53 vessel loads of earth from the Holy City were transported to this vast marble enclosure as a burial place *par excellence* for Christian warriors and pilgrims.

Returning to Leghorn, we re-embarked. Thus far our acquaintance with the Mediterranean had been marked by an uninterrupted calm, but Neptune, well known all along these classic shores, seemed displeased at the tardiness of our offerings, so, in a manner not unusual in this sea, he stirred up the waters until nearly all on board were glad to pay his demands and be quit of his presence. Early on the morning of the 14th we hove in sight of the heights of Ischia, with Cumæ on the east. All were now alert. Steering eastward we passed between the island of Procida and Misenum, and were in the far-famed Bay of Naples. Every spot before us teemed with classic memories. Baiæ and Misenum, the great naval depot of ancient Rome in her height of power, were nearest. Here it was that Pompey's fleet lay when Augustus and Antony went aboard to concert with him the second triumvirate, and all along the top and side of the promontory were the luxurious villas where the patricians of Rome were wont to spend their time. Across the little bay is Pozzuoli, and its ruined temple and amphitheatre, whilst in the back ground Monte Nuovo raises its diminutive head. Meanwhile our good vessel had brought us within view of the cone of Vesuvius, unmarked by even the lightest traces of visible volcanic exhalations, the chiefest point in this cluster of landscape beauty extending from Capri and the heights of Sorrento on the south along the bay shore, where lie Castellammare, Pompeii, Torre del Greco, Herculaneum and Portici, to the outskirts of Naples, not yet visible, behind the promontory of Posilipo. But in half an hour all had been revealed, and dropping anchor in the commercial port, Naples, rising like an amphitheatre from the waters to the heights of St. Elmo and Capo di Monte, stood before us in all her beauty. During a week's stay we did all that earnest industry could do to acquaint ourselves with the numberless objects of interest presented, visiting Vesuvius, Pompeii, Herculaneum, Pozzuoli, Lake Agnano, the Grotto del Cane, &c., and spent as much time in the Museum, where the spoils of Pompeii and Herculaneum are gathered, as possible. But these things are foreign to this letter, already too much filled with irrelevancies, and the remaining space must be devoted to a few notes on *Pharmacy in Naples*, and other matters.

Previous to the Revolution of 1860 there was an Association or College of Pharmacy in Naples, which, by nine months' study, granted a right to practice Pharmacy, and consequently many persons entered the profession who were unqualified. In 1860 the Government handed the regulation of pharmaceutical education over to the University, which now requires four years' study and practice from the student; but from what I could learn this is more the intention than the accomplished reality. An old law requires that the apothecaries, or dispensers, shall not set up shops within 75 geometrical paces of each other, but without reference to the number of inhabitants. It is the opinion of the better class of pharmaceutists that the number should be regulated by the proportion of inhabitants rather than by distance. In a population of 550,000 there are 230 shops, and among them only about twelve first-class pharmacies. Mr. Kernot (English pharmaceutist and member of the Pharmaceutical Society of Great Britain), of Strada San Carlo, informed me that the English prescription business is chiefly in the spring and autumn. The usage here, as elsewhere, is to return the prescription, keeping a copy. Physicians are required to sign their full name to prescriptions, and the apothecary may refuse to compound them otherwise, and each apothecary has, or is expected to have, a list of physicians' autographs. This rule is, however, constantly overlooked. The usage is to charge for each item in a prescription separately, and as Italian prescriptions are usually very simple in their composition they are not lucrative. An existing law requires that no poison is to be sold without a physician's prescription, and even tartar emetic is included in the list. Ordinary clerks get 60 francs ($12) a month, and apprentices pay a bonus of 300 to 400 francs on entry. There is no chemical or pharmaceutical journal published at Naples, but the "Bulletino Farmaceutica Organico dell'Associazione Farmacetica Lombarda," published at Milan, is taken by some of the pharmaceutists. Previous to 1860 the sciences taught were general chemistry, botany, mineralogy, and materia medica. The new curriculum at the University includes organic chemistry and zoology. I did not learn that practical pharmacy, as a distinct branch, was included. The examination is said to be quite rigid, and the student may obtain his tuition elsewhere if he pleases, provided he can stand the ordeal.

When at the crater of Vesuvius a number of men were engaged just within the southern edge, gathering sulphur into bags, which, when filled, are strung across a pole and carried by two men to the place of descent on the northern edge ; there they are dragged down on the volcanic ashes and, at the base of the cone, are loaded on mules, panier fashion, and transported to the coast. On inquiry it proved to be very impure, and used only for the vine disease, *Oidium Tuckeri*, for which sulphur appears to be the best remedy. The best sulphur used here comes from Sicily. Olive oil is made at Sorrento and other places near, but the greatest production is at Otranto and Bari, to the south-east, and especially near Gallipoli. The annual product of Southern Italy is about 35,000 tuns. It is said that about two-thirds of the soil in the previous named districts is devoted to the olive. It is propagated several ways, but most successfully by slips grafted on the wild olive, requiring ten years to come in bearing, and then, with care, lives centuries. The tree blooms in June, and ripens from October to December. Mr. Kernot gave me a specimen of very good fat manna, produced at Salerno, within fifty miles of Naples, and says that flake manna, small and large, comes from Sicily, but large quantities of inferior grades are produced in Southern Calabria, and probably enters commerce through Messina as Sicilian. The finest is obtained on the mountain side near Corigliano. Oil of oranges and lemons, I was informed, is made in Calabria and Sicily, in three ways: 1st, by scraping off the exterior cellular tissue, and expressing the pulpy mass. 2d, by grating off the rind, pouring on it hot water, which causes the oil to separate and rise. The pulp is then depressed beneath the surface, and the oil, after it collects, is skimmed off. 3d, by distillation. When at Cork, Mr. Frank Jennings informed me, on the authority of Mr. John A. Dix, of New York, that the best Sicily oil is obtained by dextrously wringing the rind of the orange so as to rupture its oil cells and cause their contents to spirt out, the operator holding the orange within a cask. As the drops accumulate they run down the sides, and gather at the bottom, unmixed with any foreign matters. At Naples this new process was wholly unknown. Liquorice is not grown for commerce near Naples, but 80 miles south, in Calabria. Mr. Kernot says that the brand most esteemed there is *Corigliano*, some of which, of superior quality, he gave me; then *Campagna*, *Sallugra* and *Barraco*. These are the family names of the large proprietors. Perhaps the most is grown on the east coast of Calabria, as at Cotorne Baron Campagna alone is said to make liquorice paste to the value of two millions of ducats annually, whilst the estates of the Barraco family are said to yield $750,000 annually. I have observed the fact in New Jersey, that the horizontal roots of liquorice keep below ordinary garden cultivation, and after the ground is laid out for vegetables the annual shoots appear at random in the beds. In Calabria the ground is given at the same time to wheat and other grains. The liquorice, being below the plow, is not injured, and, as it requires several years to attain its proper magnitude, the annual shoots are cut off with the grain, or avoided by the reapers, according to the manner of gathering the cereals.

Among the staples of Southern Italy is argols, and is generally the red variety, as the grapes are usually fermented with their skins. Mr. Kernot said that at almost any time one might buy 1000 casks of tartar, of 1200 lbs. each, in the Neapolitan market. Both sweet and bitter almonds are largely produced on the east coast, in the Bari district, whilst saffron (*Crocus sativus*) grows wild in the pasture region of ultra Southern Italy, and is collected to some extent for commerce in districts near Taranto.

We should not leave Naples without saying that we visited the apothecary shop at Pompeii, and stood behind its earthen counter; and, in the *Museo*, saw some of the implements used therein for making pills—a tile and spatula, with a pill box containing some remains of Pompeian skill—certainly the oldest existing samples of fossil pharmacy out of Egypt.

The trip from Naples to Rome is comfortably made by rail in 9 or 10 hours, passing through Caserta, Capua and Frosinone, and winding around the southern side of the *Alban Hills,* the train soon brought us in sight of the dome of St. Peter's, which towers more than three hundred feet above the highest of the Seven Hills in Rome, and after sweeping along nearly parallel with miles of ruined remains of Roman aqueducts, we entered the Eternal City.

Pharmacy in Rome.—The municipal laws of Rome require that the pharmaceutist should be educated before he enters into the practice of his art. To provide for this education there are lectures on materia medica, botany, pharmacy and chemistry, with which are connected two examinations. Beginners enter as apprentices, and pay a bonus or entrance fee of from 200 to 400 dollars, previous to which there is a preliminary examination of the applicant as to his fitness for the business. The tuition at the University appears to be part of the medical system, and not distinct and separate for pharmaceutists alone. There are some accomplished pharmaceutists in Rome, but many who are of but medium grade. Mr. Sinimberghi (member of the Pharmaceutical Society of Great Britain) informed me that there is no society of pharmaciens in Rome for scientific advancement, all depending on individual action, or through the faculty of the University. The law is strict that the apothecary must be examined, but is not always carried out to the letter. The law regulating competition apportions a shop to every 3000 inhabitants. Physicians write their prescriptions both in Latin and Italian. In dispensing prescriptions, the original is always given back to the patient, a copy being taken, and the prescription usually in the best stores is stamped with the proprietor's seal. The best stores are careful in dispensing and labelling their preparations and prescriptions, but a great many shops do it carelessly, and often neglect it entirely. There is no law regulating the sale of poisons by apothecaries, except that which requires that no poison be sold without a physician's prescription, and this appears to be closely adhered to, as few cases of poisoning occur. On inquiring what cognizance the law took of errors on the part of apothecaries, my informant knew of no cases of prosecution for that cause. There is in Rome an association of pharmaceutists, a sort of joint-stock company, embracing fifty eight members, which carries on a wholesale drug and importing business, for the supply of the members and others, any profits in the form of dividends accrueing to the members. There is no chemical manufacturing establishment in Rome, all chemicals being imported except such as are made by individuals for their own supply. There is no stamp duty on proprietary medicines, the only duty they pay when imported being customs. Physicians are prohibited by law from practising pharmacy or keeping shops. There is no unity of action among the pharmaceutists of Rome for professional or scientific improvement, and no combination of any kind except the joint-stock company before noticed. Clerks receive but small salaries, few over 300 dollars per annum, and, as near as a very limited inquiry would go, the prices charged for medicines are moderate. Citrate of magnesia and carbonic acid water are in general use, and the pharmaceutists sell many fancy articles not strictly within the line of Pharmacy. W. P., Jr.

ON THE POISONOUS COMPOSITION OF THE "MOTHER OF PEARL" ADDRESS OR VISITING CARD.

Munich, Bavaria, Nov. 24th, 1867,
Dr. G. C. Wittsteins, *Analytical Chemical Laboratory.*

To the Editor of the Am. Journal of Pharmacy.

Esteemed Sir:—A novelty in way of a visiting card appeared in the States during the early part of the present year, (1867,) which from its resemblance to *Mother of Pearl*, by its crystallized surface, was much admired, and was largely used. This same curiosity has of late been introduced in this city, and I am informed by a dealer that the demand is greater than the supply. Several days ago one of these crystallized cards was brought to the laboratory by the Medical Director of the Sanitary Department of Munich, requesting Prof. Wittstein to give his opinion in relation to the composition of the crystallized surface. The professor, after applying the necessary tests, pronounced it a soluble *salt of lead.*

A quantitative examination which I made of such a card, 2½ inches wide, and 4 inches long, weighing 33½ grains, yielded as its crystallized coating 6·6015 grains of Acetate of Lead. The consideration which prompted me in addressing you on this subject, it not being, strictly speaking, of Pharmaceutical interest, was to call attention to a matter of more consequence than may at first sight appear. The public not being acquainted with the poisonous properties of these cards, will not be on their guard in preventing their being chewed or eaten by small children, to whom the *sweet taste* (of the lead salt) and the crystallized appearance will form an attraction, thereby producing obscure cases of illness and poisoning. The inventors of such deleterious articles deserve, if not punishment, public censure for thus placing the health of human beings in jeopardy.

The manufacture and sale of these cards in this city has been forbidden by law.

Yours most respectfully,

ALBERT E. EBERT.

GELSEMINUM, *versus* JASMINUM.

BY THE EDITOR.

In the Chicago Medical Journal, Dr. Jonathan W. Brooks, after referring to the notice of the yellow jasmin in the United States Dispensatory, 12th edition, by Dr. Wood, *gravely* enumerates a list of works from Dioscorides down to the London Dispensatory of 1811 as authorities on the subject, calls in question the authorities of Dr. Wood, and winds up with the following paragraph:

"The apparent necessity of thus noticing the above article in the writings of so indefatigable, excellent and earnest a worker in the cause of medical science is to be regretted" (!).

The learning of Dr. Brooks has for this once, at least, proven false to him. The learned old Greek wrote about many things, some of which it is difficult now to recognize, but he never wrote about or heard of the *Gelseminum sempervirens* of our Southern States, which no doubt flowered and evolved its fragrance in the days of Nero, as it does now; but Nero's galleys never crossed the Atlantic to bring that wise physician this valuable American plant. The fact is, Dr. Brooks confounds the so-called yellow jasmin, *which is not a jasmin at all*, with the *Jasminum officinale*, and in this he has been misled by the fact that the generic name given to the yellow jasmin—Gelseminum—is one of the ancient names for the true jasmin, and possibly that under which Dioscorides described it.

The yellow jasmin of the South, though long known to botanists as a beautiful and fragrant climber, only recently became known as a powerful medicinal agent, used in irregular practice before it was employed by physicians.

GLEANINGS FROM GERMAN JOURNALS.

By J. M. Maisch.

Gummi-resina myrrhæ.—Dr. E. G. Brückner has subjected myrrh to an analysis, from which we report the following results:

Constituents soluble in water,	67·7500
Resin insoluble in ether,	4·8106
" soluble "	12·5682
" " in bisulphide of carbon,	14·0606
Matter soluble in alcohol and water,	0·4318
Insoluble (sand, bark, &c.),	0·3788
	100·0000

The matter soluble in water consists of 51·11 mucilage, precipitable by acetate of lead, and 16·64 arabin.

The tincture of myrrh has a slight acid reaction. If the precipitate by acetate of lead is decomposed by HS, a minute quantity of an acid is obtained, which is soluble in water and precipitated by lime water; the sulphide of lead retains a red-colored resin. The filtrate from the above lead precipitate contains a compound of lead with resin, which is soluble in alcohol.

The portion of resin soluble in bisulphide of carbon has the consistence of honey, and is inclined to crystallize; it contains 75·62 C, 9·54 H, 14·84O.

The resin, which is insoluble in bisulphide of carbon, but soluble in ether, dissolves also in chloroform, separating a little fat-like matter. In the dry state it resembles rosin in appearance, and contains 57·485 C, 6·616 H, and 35·899 O.

The oil of myrrh was not obtained in sufficient quantity to ascertain its composition.

The author also compares his results with those obtained by Ruickholdt, which differ from his.—*Buchner's N. Repert.* 1867, 76–87.

Solubility of silicic acid in ammonia. Richard Pribram has investigated this behavior and found that SiO_3 is taken up by ammonia in the following proportions: natural anhydrous requires 6000, artificial anhydrous 260, hydrated dried 330, gelatinous 140 parts liquor ammoniæ of 10 per cent. Exposed to the air NH_3 evaporates, and finally a clear solution of NH_4O, $4SiO_3$

remains. By boiling about 19-20ths of the remaining ammonia is expelled, and the clear solution contains about 80 SiO_3 to $1NH_3$. Dried at ordinary temperature the residue has about the same composition, but water takes up mere traces of it. The results give a hint of the manner in which silica may be administered internally, and how plants most likely take up this compound. (Wittst. Viertelj. 1867, 30—41).

Sulphite of magnesia. J. C. Sticht mixes concentrated warm solutions of sulphite of soda and sulphate of magnesia; the crystalline magma is expressed and dried. (Ibid 49).

Sulphocyanide of ammonium. J. C. Sticht fuses 2 parts dry ferrocyanide of potassium with 1 of sulphur, dissolves in water, filters, boils with solution of carbonate of potassa, filters, evaporates to 30° B., when it contains 46 per cent. sulphocyanide of potassium, and adds to 19 parts of this solution 9 parts pure sulsulphate of ammonia dissolved in water. Sulphate of potassa crystallizes out; the filtrate is mixed with twice its volume of strong alcohol, the precipitate separated, the alcohol distilled off, the residue diluted with water, decolorized with animal charcoal and evaporated to crystallize. (Ibid 48).

Tinctura Rosæ centifoliæ. J. B. Enz calls attention to Kastner's observation that the brownish yellow tincture is colored rose-red by acids, and greenish yellow by alkalies; the beautiful odor becomes apparent on diluting it with 16 to 20 parts water. It contains 4·8 per cent. solid ingredients, which after evaporation have lost their behavior towards acids and alkalies. It contains potassa, lime, magnesia combined with malic, tartaric and phosphoric acids, tannin, fat, resin, red coloring matter, bitter principle, sugar and volatile oil. (Ibid 53—56).

Cochineal. E. Dietrich found that select Honduras cochineal yields, after deducting carbon, 3·211 per cent. ashes, consisting of $NaCl$ ·506, NaO 13·404, KO 18·630, CaO 2·404, MgO 6·437, Al_2O_3 1·390, Fe_2O_3 1·152, PO_5 47·951, SiO_3 7·923. (Ibid 57).

Carbolic acid, according to Parisel (Annuaire, 1866), like creasote from beechwood tar, does not possess the property of crystallizing; the commercial crystallized article is obtained by the addition of a little naphthalin. (Ibid 125).

ON THE USE OF BENZOIN IN OINTMENTS.

By Thomas Doliber.

In 1865 I accepted the query in regard to benzoinated lard. The query consisted of three distinct clauses, of which the first, as to the best process of benzoinating lard, was answered in a paper read before the Association last year, (see Proc. Am. Pharm. Ass. 1866, p. 224.) Continued experience has confirmed me in the belief that the formula there given is at least as good as any that has been made known. Having been told, however, by one or two persons that they were unsuccessful in preparing benzoinated lard by that formula, the preparation sometimes having a yellowish tinge, I would say that the tincture should always be made from the best selected benzoin; the lard should be obtained in the "leaf" and rendered in the laboratory. Lard as found in the markets will not always answer the purpose, having been improperly prepared.

An attempt was made to answer the second clause, in regard to its use in mercurial ointment, which was only partly successful, the ointment not having been made long enough to become rancid. In June, 1866, three portions of mercurial ointment were made. At the end of 14 months they are found in the following condition: the first, made in accordance with the formula of the Pharmacopœia, is thoroughly rancid. The second, in which the ointment of benzoin of the Pharmacopœia was substituted for lard, is rancid, but somewhat less so than the first. The third, in which benzoinated lard was used instead of lard, still remains *perfectly sweet and unchanged.* These ointments have been exposed to the air, although covered lightly with paper, on a high shelf in a warm room during the winter, and at the ordinary temperature during the summer, as have also all the cerates and ointments experimented upon which are mentioned in this paper.

So far as I have been able to learn, it is the universal opinion of those physicians who have used the benzoinated ointments, that their medicinal properties are not injured, but are improved by the process. Especially is this the case with benzoinated ointment of oxide of zinc, which has been used for the past ten years in this city to a very considerable extent, and the use of which has with some physicians almost entirely superseded that of the officinal ointment.

Some attempt has been made to answer the final clause, as to the other ointments in which this form of lard may be advantageously used.

From the list of cerates and ointments of the Pharmacopœia, the following 17 were selected for experiment, as being most liable to rancidity.

Ceratum Adipis.
“ Cetacei.
“ Plumbi Subacetatis.
“ Zinci Carbonatis.
Unguentum Acidi Tannici.
“ Adipis.
“ Antimonii.
“ Aquæ Rosæ.
“ Hydrargyri Ammoniati.
“ “ Nitratis.
“ “ Oxidi Rubri.
“ Iodinii.
“ “ Compositum.
“ Plumbi Carbonatis.
“ Potassii Iodidi.
“ Sulphuris Iodidi.
“ Zinci Oxidi.

In all of which the benzoin could be introduced by means of the benzoinated lard, except the three following--ceratum cetacei, ceratum plumbi subacetatis and unguentum aquæ rosæ. After numerous experiments, the following formulas were adopted for them.

CERATUM CETACEI.

Take the quantities of the ingredients in the formula of the Pharmacopœia, melt as directed and stir the mixture constantly; when nearly cold, add two and a half fluidrachms of tincture of benzoin* and stir the mixture until cold. It is well known

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**Tincture of Benzoin.*

Take of benzoin, in coarse powder, six troyounces. Alcohol, one pint. Macerate the benzoin with the alcohol until it is dissolved; then filter through paper.

that this cerate, when made by the officinal formula, is very liable to rancidity, but a portion made by the above formula on Feb. 20, 1867, still continues perfectly sweet and unchanged.

CERATUM PLUMBI SUBACETATIS.

Take of solution of subacetate of lead, two fluidounces and a half.

White wax, four troyounces.

Olive oil, eight troyounces.

Camphor, thirty grains.

Tincture of benzoin, four fluidrachms.

Mix the wax previously melted with the oil; then gradually pour in the solution of subacetate of lead, and when the mixture becomes melted remove it from the fire and stir it constantly with a wooden spatula until it becomes cool. Lastly add the camphor dissolved in the tincture of benzoin and mix them.

This cerate, when made by the officinal process, is extremely liable to become rancid, and is perhaps the most difficult of all the cerates and ointments to keep unchanged; a portion made by the above process in August, 1866, was found, in May, 1867, to be perfectly sweet and soft, and unchanged in every respect. It was, however, at that time stirred up and exposed more thoroughly to the air, and at the present time, although it continues sweet and soft, it has become slightly discolored on the surface.

The cerate made by this process is of the same color as that made by the officinal process when recent, that is, not perfectly white; the former retains its color; the latter becomes whiter in proportion as it becomes rancid.

UNGUENTUM AQUÆ ROSÆ.

Take of ointment of rose water, 16 troyounces.

Tincture of benzoin, 4 fluidrachms.

Rub them together until they are thoroughly mixed. This is another ointment very liable to become rancid by age; a portion benzoinated by the above process in Feb., 1867, still continues perfectly sweet, although slightly granular on the surface.

Ointment of rose water, unless very carefully prepared, cannot be benzoinated by this process. The vessel in which the ointment is made should be kept in the water-bath until the mixture becomes fluid after adding the rose water; it should then be removed and the mixture stirred constantly and rapidly until it becomes cool. In making six or eight times the quantity of the formula of the Pharmacopœia, it will require from four to six hours faithful stirring.

The results of the experiments upon the other ointments and cerates are presented in the following table: ointment of red oxide of mercury having been experimented upon previously, and the results stated in a former paper is omitted here. Ointment of oxide of zinc was not experimented upon, as from long experience I have never known the benzoinated preparation to change, while it is well known that the officinal ointment very soon becomes rancid.

In the column of names the figures have reference to the different processes employed; 1 meaning the officinal; 2, that in which ointment of benzoin (U. S. P.) was substituted for lard, and 3, that in which benzoinated lard was substituted. The first three preparations in the table are made by the formulas given above.

Name.	When made.	Age.	Condition in August, 1867.
	1866.	mos.	
Cer. Plumb. Sub.	Aug. 28	12	Sweet, discolored slightly on surface.
	1867.		
“ Cetacei.	Feb. 20	6	Sweet.
Ung. Aq. Ros.	“ 22	6	Sweet, slightly granular on surface.
Cer. Adipis 1	Apr. 1	4	Sweet and smooth.
“ “ 3	June 10	2	Sweet and smooth.
“ Zinci Car. 1	May 25	3	Smooth, slightly rancid.
“ “ 3	“ 25	3	Sweet and smooth.
Ung. Acid. Tannic. 1	“ 22	3	Spongy and granular, rancid.
“ “ “ 2	“ 22	3	Granular, rancid.
“ “ “ 3	“ 22	3	Sweet, slightly granular.
“ Adipis 1	Apr. 1	4	Sweet and smooth.
“ “ 3	May 23	3	Sweet and smooth.
“ Antim. 1	“ 24	3	Spongy, rancid.
“ “ 3	“ 24	3	Spongy, sweet.
“ Hyd. Ammon. 1	“ 24	3	Granular, slightly rancid, yellowish.
“ “ “ 3	“ 24	3	Sweet and smooth, white.
“ “ Nit. 1	Apr. 1	4	Color mottled green and yellow, sweet.
“ “ “ 3	May 31	2	Smooth and even in color, sweet.
“ Iodin. 1	“ 20	3	Granular, no smell of iodine.
“ “ 3	“ 15	3	Granular, slight smell of iodine.
“ “ Co. 3	“ 29	3	Granular, slight smell of iodine.
“ Plumb. Carb. 1	“ 25	3	Sweet and smooth.
“ “ “ 3	“ 25	3	Sweet and smooth.
“ Pot. Iod. 1	“ 20	3	Yellow, granular, separated, smell of iodine.
“ “ “ 2	“ 22	3	Yellow, granular, odor good.
“ “ “ 3	“ 20	3	Sweet, color unchanged.
“ Sulph. Iod. 1	“ 22	3	Crust on surface, odor good.
“ “ “ 3	“ 22	3	Crust on surface, odor good.

The experiments were interesting in the case of ointment of nitrate of mercury; that made with benzoinated lard remained unchanged in color, odor and consistence. In making the ointment of iodide of potassium with ointment of benzoin (U. S. P.) the color changed rapidly to yellow during the process of making it.

In some of the cases mentioned in the table, sufficient time has not elapsed to test them properly, and in the iodine preparations the experiments are not conclusive.

When it is considered that the exposure to air and temperature to which these cerates and ointments were subjected, was very much greater than they would ever be likely to receive at the hands of the apothecary, it will be conceded that the experiments were very satisfactory, and that the remark made in a former paper can be repeated here, that "there is no doubt that the benzoinated lard can be used in many of the ointments of the Pharmacopœia, without affecting their medicinal qualities."

BOSTON, August, 1867.—*Proc. Amer. Pharm. Assoc.*, 1867.

ON COMPOUND DECOCTION OF SARSAPARILLA, U. S P.

By WILLIAM SAUNDERS.

QUERY 6.—Is the direction in the formula for compound decoction of sarsaparilla, U. S. P., to macerate the ingredients in cold water for twelve hours previous to ebullition, sufficiently important to justify the delay it occasions? and will not digestion at 200° F. for two hours be a judicious alteration?

The first step taken in collecting material for a reply to this query was the preparation of the officinal decoction. One-fourth of the quantity ordered in the Pharmacopœia was made at a time, containing sarsaparilla root cut into short pieces, and bruised by passing it coarsely through a Swift's drug mill. One and a-half ounces bark of sassafras root, bruised; liquorice root, bruised, and guaiacum wood, rasped, of each a quarter of an ounce; mezereon bark, cut into small pieces, forty grains. These ingredients were macerated in cold water for twelve hours, then placed on the fire and boiled for a quarter of an hour, small quantities of water being added from time to time to make up the loss by evaporation. The resulting liquid was strained through a fine brass sieve, and the materials squeezed with the hand to express as much of the liquid as possible. Cold water was added to the ingredients, and pressure applied as before, until a pint was obtained. This was set aside for about twelve hours, when the liquid was carefully decanted from sediment,—the last portion, containing whatever may have been precipitated, being thrown on a filter, and when all had passed through, the filter was washed with a small qantity of water, so that none of the soluble matter might be lost.

Ingredients similar in quantity, quality, and mode of preparation were used in all the subsequent experiments, and the same process of pressing the decoction and washing the materials followed.

In the next experiment, the ingredients were macerated at 200° F. for two hours.

Endeavoring to ascertain whether the time occupied in preparation might be shortened still further, another portion was macerated at 200° F. for one hour, and in the fourth experiment at the same temperature for half an hour.

The fifth experiment consisted in macerating the ingredients for one hour in cold water, then boiling for fifteen minutes, as in the officinal decoction; and the final operation simply boiling the ingredients for fifteen minutes, without previous maceration.

The liquid resulting from the sixth experiment was deficient in color and strength, but the other five samples were almost identical in appearance and taste. The officinal and No. 5 seemed to have a little stronger flavor of sassafras than the other three, but the difference was very slight.

One-half the quantity of decoction obtained from each experiment was evaporated to a solid extract, of pilular consistence. These experiments were twice repeated, and I now give the average results in each case:

No. 1, the officinal decoction, yielded 154 grains to the pint.
No. 2, macerated at 200° F. for two hours, 158 grains.
No. 3, macerated at 200° F. for one hour, 143 grains.
No. 4, macerated at 200° F. for half an hour, 148 grains.

No. 5, macerated in cold water one hour, boiled 15 minutes, 138 grains.

No. 6, boiled 15 minutes without previous maceration, 130 grs.

That No. 4 should yield an average of 5 grains more extract than No. 3, although macerated for a shorter time, is strange, and can, I think, be best accounted for by supposing some difference in quality in the materials used, which escaped observation, —probably in the liquorice root. In both experiments the yield was in excess of No. 3.

The results may thus be summed up: No. 2 yields four grains more of extract to the pint than the officinal decoction, and is made in two hours,—one-sixth of the time. No. 3, eleven grains less than the officinal; time, one hour. No. 4, six grains less; time, half an hour. No. 5, sixteen grains less; time, one and a quarter hours. No. 6, twenty-four grains less; time, fifteen minutes.

The difference of yield is very slight, even when the time is reduced to an hour or half-hour. I can see no reason why, in a future revision of the Pharmacopœia, the time should not be shortened; doubtless every pharmaceutist who has been in the habit of following the directions at present given, would hail the change with pleasure.

Samples of the decoctions are here submitted for inspection. —*Proc. Amer. Pharm. Assoc.*, 1867.

ON HONEY AND ITS ADULTERATIONS.

By Jervis W. Colby.

Query 8th.—For some years past commercial honey has frequently been a subject of adulteration. What is the present condition of the trade in this article, foreign and domestic, and what are the adulterations made?

Of foreign commercial honey, West India alone is brought to this market, principally from Cuba and St. Domingo. It is always strained and, of the two, St. Domingo is the lighter, both in color and body; they rate about the same, if anything, St. Domingo is a little the higher. The principal consumers are brewers, not only in this country, but it is exported from this port to Europe, mostly to Germany.

It is now quoted at 57 @ 60 cts. gold per gallon, in bond, 80 @ 85 cts. gold or $1.15 @ $1.25 currency, duty paid; the duty 20 cts. per gallon.

Domestic honey is now, for the greater part, furnished by the northern States, although there is some southern honey in the market. There is not the organized trade in domestic that exists in West India, and no domestic is exported.

The market for all kinds of honey is at present poorly supplied, it being in advance of the season.

Adulterations.—In foreign and home publications, in which I have found articles on the subject, a great variety of adulterations are mentioned, among which are cane sugar, different forms of starch, chalk, plaster of Paris, pipe clay, gypsum, &c., &c. The largest dealers in foreign honey claim to know no such thing as adulterated Cuban honey, and, after examining many specimens, I have not found one adulterated.

The same cannot be said of domestic, which is occasionally adulterated with some form of starch, to increase bulk and weight, also to improve the color and to correct any acidity it may have acquired. But cane sugar as syrup is almost the only adulteration made use of; this is not uncommon in domestic, and is found in almost all proportions, from an entirely fictitious article down, a favorite plan being honey 4 parts, white sugar 3 parts, water 4 parts; heat. It is customary to flavor both, fictitious and adulterated, with peppermint.

The presence of either cane sugar or starch is readily shown, and aside from these I think we need not mistrust that our honey is adulterated.—*Proc. Amer. Pharm. Assoc.*, 1867.

ERGOT.

By James W. Mill.

Query 16.—Can the existing pharmaceutical preparations of Ergot be improved, if studied in the light offered by W. T. Wenzell, and can a solid permanent preparation of Ergot be made, representing its alkaloids in a solid form?

The officinal preparations of Ergot are the wine and fluid extract. The wine is obtained by simply percolating the drug with sherry wine, and the desired result is well enough attained by the formula as it is. The more important preparation—the fluid extract—is made by exhausting sixteen troyounces of Ergot with diluted alcohol acidulated with acetic acid, reserving the first twelve fluidounces of the percolate, evaporating the remainder to four fluidounces, mixing the two solutions and filtering. According to the investigations of Mr. Wenzell, ergotic acid—the organic acid of Ergot, with which its alkaloids mostly are combined—is volatile. Viewed in the light of this fact, the propriety of using an acidulated menstruum in the preparation of the fluid extract is apparent, and I do not see that, pharmaceutically, the formula can be improved. I can only suggest an economical modification of it, as follows:

Take of Ergot, finely ground, and as much of it as possible passed through a No. 60 sieve, sixteen troyounces.
Water, acidulated with acetic acid in the proportion of two fluidrachms to the pint, a sufficient quantity.

Moisten first the fine powder with the menstruum and pack it in a glass percolator with moderate pressure; in the same way treat the coarser powder and proceed with the percolation till three pints have been obtained; evaporate this on a water bath to twelve fluidounces; mix with it four fluidounces of alcohol and filter. In this process it will be observed that only the preservative influence of alcohol is called into requisition—the extraction of the drug being accomplished wholly by means of the acidulated water. A saving of nearly a dollar a pint is thus effected, and without, I think, any detriment to the therapeutic value of the preparation, for, as is well known, water is a complete solvent of the active principles of Ergot, and, though water alone cannot be used as a menstruum on account of the ready decomposition of a purely aqueous solution, yet, when the water has been previously acidulated, the stability of the percolate is insured for a period long enough to permit its concentration and subsequent admixture with alcohol, after which its permanence is secured. It would be prudent, however, to prepare the yearly supply during the cold weather of winter, as then all risk of loss would be avoided. The preliminary extraction of the fixed oil, aside from facilitating the pulverization of the drug, does not seem to be otherwise of advantage. Properly packed, the percolation proceeds slowly and regularly, and when three pints shall have passed the drug will be found practically exhausted, the last portions of the percolate giving only a slight precipitate with solution of acetate of lead or solution of bichloride of mercury and bicarbonate of potassa. Thus prepared, fluid extract of Ergot is a thin, dark colored liquid, and, though not entirely freed from inert matter and containing only one fourth of its bulk of alcohol, keeps well. Gently heated with a slight excess of potassa, propylamia is freely evolved.

Ergot is chiefly employed to facilitate parturition, by its power of promoting uterine contraction. For this purpose, and also in the treatment of other complaints where the use of Ergot is indicated, the fluid extract forms a convenient and ready means of administering the drug, and, it seems to me, satisfies every therapeutic requirement. If desired, however, an efficient solid extract could be prepared by exhausting the Ergot with acidulated water; evaporating to a syrupy consistence; precipitating the albumen, etc., with alcohol; filtering and again evaporating to a proper consistence.

ON CUBEBIN AND THE DIURETIC PRINCIPLE OF CUBEBS.

By F. V. Heydenreich.

"To what constituent or constituents does cubeba owe its diuretic power? and what relation does cubebin hold to the soft resin and volatile oil in the therapeutic action of the drug?"

The oleo-resin of cubebs is generally regarded as containing all the remedial properties of the drug. In order to answer this query, it was necessary first to prepare the oleo-resin, and then to separate the various substances contained in it. To this end 80 ounces of cubeb berries were taken, reduced to fine powder, and then subjected to the action of ether, for the purpose of obtaining the oleo-resin. The quantity thus obtained was 19 oz., or nearly 24 per cent. The oleo-resin was then subjected to distillation with water, to separate sufficient volatile oil for experiments, and afterwards heated on a water-bath, to drive away the remainder of the volatile oil. The loss of weight by this operation was 10 ounces and 7 drachms, showing the presence of this amount of volatile oil, or a little over 13 per cent., and leaving as residue the soft resin, cubebin and wax, amounting to 8 oz. and 1 drachm. A portion of this was reserved for experiments, and the remainder mixed with a small portion of ether and set aside to facilitate the deposition of cubebin and wax.

Experiments were first made with the volatile oil. This had a light straw color, and had to a much greater extent the odor of the drug than the green commercial article. It was tried as follows:—

Case No. 1. Three minims were given every two hours, for 10 hours, without any appreciable effect.

Case No. 2. Ten minims were given every two hours, for six hours. The effect in this case was a slight feeling of warmth in the region of the stomach, which was slowly diffused through the body, but no appreciable increase of urine could be noted.

Case No. 3. Ten minims were given every hour, for 12 hours, with a view of obtaining the constitutional effects of the oil on the system. No increase in the amount of urine could be noticed, but great inward heat was felt, amounting almost to fever. These unpleasant symptoms passed off during the following day.

Cubebin was experimented with next. By repeated crystallizations, it had been obtained perfectly pure, in white silky needles, tasteless and odorless.

Case No. 1. Ten grains were administered every hour, for six hours, without producing any effect on the system whatever.

Case No. 2. Ten grains were administered every hour, for 12 hours, and this was followed by a dose of 30 grains, without producing any effect whatever.

The soft resin had the consistence of honey, of a dark olive-green color, with some odor yet of cubeb. It was tried with the following results:—

Case No. 1. Ten grains given every two hours, for six hours, acted the following morning as a slight purgative. The urine acquired a peculiar odor, reminding one somewhat of the drug, but no increase in the secretion of urine could be noticed.

Case No. 2. Sixty grains were taken in two doses, at an interval of three hours. This acted as in the preceding case, but was accompanied by a considerable increase of urine.

Case No. 3. One hundred grains were given in five doses, at intervals of two hours. This did not operate on the bowels, but produced a considerable increase in the secretion of urine, accompanied by a slight burning sensation during the passage, which passed off with the effect of the medicine.

Case No. 4. Two drachms were taken in six doses, at intervals of two hours. This caused no increase in the secretion of urine, but, acting as an irritant, produced very decided irritation during the passage of urine, together with a very considerable increase of heat over the body.

From these experiments, though they are perhaps too few to settle the points definitely, it would appear—

1st. That the diuretic properties of cubeb reside in the soft resin;

2d. That cubebin, as compared with the other constituents of cubeb, is inert;

3d. That the volatile oil acts as a carminative and stimulant, producing, in large doses, the unpleasant effects produced by other volatile oils having similar properties.

ON SYRUPUS SENEGÆ.

By C. Lewis Diehl.

In the history of pharmacy, the present may be called the era of pharmaceutic specialities. Physicians and pharmacists are not satisfied with the production of medicines that will produce the desired therapeutic effect, but it has also become necessary to please the eye with the form, color or brightness of the preparation. It, unfortunately, too frequently happens that, in order to produce a clear solution, tincture, syrup or other preparation, a portion of its activity is sacrificed; but this is a matter of indifference (when not attributable to ignorance) to the pharmacist preparing, or the physician prescribing it, provided only that the fancy of the patient be pleased. There doubtless exist many preparations, however, that can be improved in appearance without injury to their therapeutic action, and to these perhaps syrup of seneka belongs; but such improvement should be submitted to the approval of a body of scientific men, who are qualified to judge of its value. These considerations doubtlessly prompted the Committee on Scientific Queries to originate Query 9, which I had the honor to accept at the last meeting.

The remedial properties of seneka appear to reside chiefly in the polygalic acid (senegin); the volatile principle, virginic acid, and a bitter coloring matter probably also contribute to its activity, while the other constituents—tannic acid, gum, pectic acid, albumen, cerin and fixed oil—contribute but little if any to its medicinal powers. The problem to be solved appears, therefore, to be the embodiment of the three first mentioned constituents in the form of syrup, and if the stability of the preparation demands, to sacrifice one or all the others. The virtues of senega being, according to various authorities, readily extracted by cold or boiling water, and diluted or strong alcohol, it remains to be determined which of these, or in what manner they are best applied to the extraction of the above mentioned active principles, without extracting the inert principles favoring decomposition.

Accordingly a number of syrups were prepared with different solvents, and each syrup was divided in 3 vials, two of which were carefully sealed, the other loosely corked. One of the sealed vials was kept in a cool cellar, and the portion thus preserved designated *A*; the other was kept in the store room, exposed to all the variations of temperature, and is designated *B*; the loosely corked vial was also kept in the store room and occasionally opened, so as to represent as nearly as possible the condition it would be under in the dispensary; this was designated *C*.

I. Syrup prepared September, 1866, according to the formula of the U. S. Pharm. Not clear when first made; remained unchanged up to date; no precipitate formed; somewhat more viscid than would be warranted by the amount of sugar contained in it; of a color, taste and odor indicative of good syrup of seneka.

II. Syrup prepared October, 1866, like I, differing only in using but 14½ oz. of sugar to 8 fluidounces of liquid, instead of 15 oz. required by the Pharm. formula. Not clear when first made, but when allowed to stand a few weeks formed a bulky deposit, which when last examined was disseminated through about one-fourth the liquid, leaving the supernatant portion perfectly clear, limpid, and of a red-brown color. In odor and taste it corresponded with I and kept very well.

III. Syrup prepared February, 1867, like II, with which it corresponded in appearance and properties, with the exception that *C* had formed a small amount of mould on its surface during the summer months.

IV. Syrup prepared in September, 1866; the root was extracted with a menstruum of 3 measures of alcohol 0·835 to 2 measures of water; otherwise the officinal directions were followed. In appearance and properties it corresponded most closely with I, like which it has formed no deposit up to date. The portion *C*, however, formed a small amount of mould, somewhat more abundant than III.

V. Syrup prepared in September, 1866, differing from the officinal by the use of a menstruum of 2 measures of alcohol 0·835 to 1 measure of water. It was not clear, and shortly a flocculent matter separated and rose to the surface in *B* and *C*, which otherwise kept very well; *A* remained uniform. This syrup was of a brown-red color and did not differ materially in taste or odor from I.

VI. Syrup prepared in February, 1867, differing from the officinal by the use of alcohol 0·835 as menstruum. It was of a light yellow color, not quite clear, and formed a flocculent precipitate on standing a few days. In odor and taste it was decidedly inferior to the previous lots.

VII. Syrup prepared in February, 1867, in the officinal proportions, by exhausting the root by displacement with cold water, evaporating to the consistence of a thin extract, which was exhausted with cold alcohol 0·835, the alcoholic tincture evaporated to expel alcohol, the residue taken up by water in the proper proportion and converted into syrup. This formed a beautiful clear syrup, of a red-brown color, limpid and permanent. In odor it was inferior to the other syrups, and it did not possess their aromatic taste, but in acrimony it is equal to any of them. A small amount of mould formed on *C*.

VIII. Syrup prepared March, 1867, like VII, possessing the same characters. It crystallizes, owing to the presence of a little alcohol.

IX. Syrup prepared July, 1867, like VII, differing only in the application of boiling alcohol to exhaust the aqueous extract and immediate filtration from undissolved portions. In appearance and properties same as VII.

X. Syrup prepared June, 1867, like VII, differing in the use of diluted alcohol for the exhaustion of the root, and of boiling alcohol for the exhaustion of the extract. This preparation was not clear, and in fact resembled in appearance and properties I, but was not quite so aromatic.

XI. Syrup prepared July, 1867, like X, with which it corresponds in every respect.

Syrups I, IV and V were prepared from the same lot of root; III, VI and VII from a second, IX and XI from a third, and the others from individual lots.

Portions of each lot accompany this paper.

It will be observed that syrups VII, VIII and XI were the only ones that furnished perfectly bright preparations and did not deposit or thicken. As the process pursued in their preparation is essentially the same, but differs considerably from the others, it is necessary to give it a more critical examination.

Of the principles enumerated as constituents of seneka root, we find that polygalic acid, tannic acid, pectic acid, gum and albumen are soluble in water when isolated, while virginic acid, the coloring matter, cerin and fixed oil are insoluble. As they exist in the drug, however, both the coloring matter and virginic acid are to a certain extent, if not entirely, soluble in water, as evidenced by the odor and color of the infusion. In concentrating the infusion to the consistence of syrupy extract, the greater portion of the virginic acid is lost, but the coloring matter is retained. The treatment of the syrupy extract by cold alcohol, has for its object the separation of gum, albumen, and pectic acid, and undoubtedly accomplishes this object; polygalic acid, traces of virginic acid, the coloring matter and tannic acid remains in solution with the alcohol, and by subsequent treatment enter the composition of the syrup. Polygalic acid being but sparingly soluble in cold alcohol, when isolated, although freely soluble in boiling alcohol; I instituted experiment IX, which satisfied me that none of the active matter remained undissolved. Moreover, the residues in experiments VII, VIII and IX were, when washed with cold alcohol, tasteless, while the alcoholic tincture was strongly acrimonious—satisfactory proof that polygalic acid, as it exists in the drug, is soluble in cold alcohol. Experiments X and XI were instituted in order to determine whether a more aromatic preparation could be obtained, which would at the same time exhibit the desired properties, viz: transparency and permanence. The results were in the negative, the preparations being, if anything, inferior to the officinal syrup.

Having thus given attention to all points of objections, and refuted them experimentally as far as they lay within the scope of my knowledge, I express myself favorable to the syrup prepared according to experiment VII, and beg leave to recommend the following formula, which I hope will be examined critically and experimentally.

Take of seneka, in moderately fine powder, four troyounces; sugar, (refined) fourteen and a half troyounces; distilled water two pints, or a sufficiency; alcohol eight fluidounces. Moisten the seneka with two fluidounces of water, and allow to rest for two or three hours; then pack tightly in a conical percolator, pour on water until the infusion begins to pass, when stop the operation for 24 hours, after which resume displacement, and continue until two pints have passed, or until the root is exhausted. Evaporate the percolate carefully on a water-bath to two fluidounces and, while still warm, gradually stir in the alcohol. Transfer the mixture to a bottle and shake occasionally for several hours, filter, distil to two fluidounces, add two fluidounces of water and evaporate again to two fluidounces. Then add sufficient water to make the measure up to 8 fluidounces, filter, and if not perfectly clear, refilter until the liquid passes perfectly clear. Pour the filtrate on the sugar contained in a porcelain dish and make syrup.

These directions, carefully followed, will insure a handsome product; it is scarcely necessary to state that the heating should be moderate; the filtrate, as stated must be perfectly clear, as otherwise the preparation becomes more or less turbid. Although only a secondary consideration, it will be observed that by this process alcohol is economized, the amount used being not half the quantity required by the officinal process, and entirely recoverable by distillation, which is not the case when a portion is absorbed by the drug.

If this process should meet the approval of the Association, I would suggest that a fluid extract of seneka and a compound fluid extract of squills and seneka could be prepared according to this process, which would afford a ready means of preparing syrup of seneka and compound syrup of squills.

Louisville, *Ky.*, July 25th, 1867.

—*Proc. Amer. Pharm. Assoc.*, 1867.

TALL TREES IN AUSTRALIA.

It would appear that the famous "mammoth trees" of California are not only rivalled, but surpassed in height, in Victoria Colony, Australia. The principal facts which warrant this conclusion, are collected by Dr. Ferdinand Müller, Director of the State Garden at Melbourne, in his interesting pamphlet, recently issued, upon "Australian Vegetation, considered especially in its bearings upon the occupation of the Territory, and with a view of unfolding its resources,"—from which the subjoined extracts are derived:—

"The marvellous height of some of the Australian, and especially Victorian trees, has become the subject of closer investigation, since of late, particularly through the miners' tracks, easier access has been afforded to the back-gullies of our mountain-system. Some astounding *data*, supported by *actual* measurements, are now on record. The highest tree previously known was a *Karri-Eucalyptus* (*Eucalyptus colossea*), measured by Mr. Pemberton Walcott, in one of the delightful glens of the Warren river of Western Australia, where it rises to approximately 400 feet high. Into the hollow trunk of this Karri, three riders, with additional pack-horse, could enter and turn in it without dismounting. On the desire of the writer of these pages, Mr.

D. Boyle measured a fallen tree of *Eucalyptus amygdalina*, in the deep recesses of Dandenong, and obtained for it the length of 420 feet, with proportions of width, indicated in a design of a monumental structure placed in the exhibition; while Mr. G. Klein took the measurement of a eucalyptus on the Black Spur, ten miles distant from Healsville, 480 feet high! Mr. E. B. Hayne obtained, at Dandenong, as measurements of height of a tree of *Eucalyptus amygdalina:* Length of stem from the base to the first branch, 295 feet; diameter of the stem at the first branch, 4 feet; length of stem from first branch to where its top portion was broken off, 90 feet; diameter of the stem where broken off, 3 feet; total length of stem up to place of fracture, 365 feet; girth of stem three feet from the surface, 41 feet. A still thicker tree measured, three feet from the base, 53 feet in circumference. Mr. George W. Robinson ascertained, in the back-ranges of Berwick, the circumference of a tree of *Eucalyptus amygdalina* to be 81 feet at a distance of four feet from the ground, and supposes this eucalypt, towards the sources of the Yarra and Latrobe rivers, to attain a height of half a thousand feet. The same gentleman found *Fagus Cunninghami* to gain a height of 200 feet, and a circumference of 23 feet.

"It is not at all likely that, in these isolated inquiries, chance has led to the really highest trees, which the most secluded and the least accessible spots may still conceal. It seems, however, almost beyond dispute, that the trees of Australia rival in length, though evidently not in thickness, even the renowned forest-giants of California, *Sequoia Wellingtonia*, the highest of which, as far as the writer is aware, rise, in their favorite haunts at the Sierra Nevada, to about 450 feet. Still, one of the mammoth trees measured, it is said, at an estimated height of 300 feet, 18 feet in diameter! Thus to Victorian trees, for elevation, the palm must, apparently, be conceded. A standard of comparison we possess in the spire of the Münster of Strasburg, the highest of any cathedral of the globe, which sends its lofty pinnacle to the height of 466 feet, or in the great pyramid of Cheops, 480 feet high, which, if raised in our ranges, would be overshadowed, probably, by Eucalyptus trees.

"The enormous height attained by not isolated, but vast masses of our timber trees, in the rich diluvial deposits of sheltered depressions within Victorian ranges, finds its principal explanation, perhaps, in the circumstance, that the richness of the soil is combined with a humid geniality of the climate, never sinking to the colder temperature of Tasmania, nor rising to a warmth less favorable to the strong development of these trees in New South Wales, nor ever reduced to that comparative dryness of air which, even to some extent in the mountain-ravines of South Australia, is experienced. The absence of living gigantic forms of animal life amidst these, the hugest forms of the vegetable world, is all the more striking.

"Statistics of actual measurement of trees, compiled in various parts of the globe, would be replete with deep interest, not merely to science, but disclose, also, in copious instances, magnitudes of resources but little understood up to the present day. Not merely, however, in their stupendous altitude, but also in their celerity of growth, we have, in all probability, to accede to Australian trees the prize. Extensive comparisons, instituted in the Botanic Gardens of this metropolis, prove several species of Eucalyptus, more particularly *Eucalyptus globulus* and *Eucalyptus obliqua*, as well as certain Acacias—for instance, *Acacia decurrens*, or *Acacia mollissima*—far excelling, in their ratio of development, any extra-Australian trees, even on dry and exposed spots, such into which spontaneously our blue gum-trees would not penetrate. This marvellous quickness of growth, combined with a perfect fitness to resist drought, has rendered many of our trees famed abroad, especially so in countries where the supply of fuel or of hard-woods is not readily attainable, or where for raising shelter, like around the cinchona-plantations of India, the early and copious command of tall vegetation is of imperative importance. To us here this ought to be a subject of manifold significance. I scarcely need refer to the fact, that, for numerous unemployed persons, the gathering of Eucalyptus seeds, of which a pound weight suffices to raise many thousand trees, might be a source of lucrative and extensive employment; but on this I wish to dwell, that in Australian vegetation we probably possess the means of obliterating the rainless zones of the globe, to spread at last woods over our deserts, and thereby to mitigate the distressing drought, and to annihilate, perhaps, even that occasionally excessive dry heat evolved by the sun's rays from the naked ground throughout extensive regions of the interior, and wafted with the current of air to the east and south, miseries from which the prevalence of sea-breezes renders the more littoral tracts of West and North Australia, almost free. But in the economy of nature the trees, beyond affording shade and shelter, and retaining humidity to the soil, serve other great purposes. Trees, ever active in sending their roots to the depth, draw unceasingly from below the surface-strata, those mineral elements of vegetable nutrition on which the life of plants absolutely depends, and which, with every dropping leaf, is left as a storage of aliment for the subsequent vegetation. How much lasting good could not be effected, then, by mere scattering of seeds of our drought-resisting acacias and eucalypts and casuarinas, at the termination of the hot season, along any water-course, or even along the crevices of rocks, or over bare sands or hard clays, after refreshing showers? Even the rugged escarpments of the desolate ranges of Tunis, Algiers, and Morocco, might become wooded: even the Sahara itself, if it could not be conquered and rendered habitable, might have the extent of its oases vastly augmented; fertility might be secured again to the Holy Land, and rain to the Asiatic plateau, or the desert of Atacama, or timber and fuel be furnished to Natal and La Plata. An experiment, instituted on a bare ridge near our metropolis, demonstrates what may be done."

A systematic catalogue of the known trees of Australia, with indications of their territorial distribution, occupies 18 pages of this essay; from which it appears, that in Australia, no less than 950 woody plants attain a height of at least 30 feet, or thereabouts. A. G.—*Silliman's Journal*, November, 1867.

ON SUPPOSITORIES AND MEDICATED PESSARIES.

By Barnard S. Proctor.

Now that the dispensing of suppositories is becoming a matter of frequent occurrence, it is highly desirable to give publicity to anything which will facilitate the operation, and diminish the uncertainty which has hitherto attended it. I therefore beg to offer to my pharmaceutical brethren a few remarks upon the methods of manipulation which, after sundry trials, I have found most convenient.

The difficulties to be overcome may be thus enumerated:

The composition must be firm, but readily fusible, not liable to split, and not apt to adhere to the mould.

The active ingredients must be so diffused that there shall be an equal quantity in each suppository, whether six or sixty have to be dispensed at one operation, and that each suppository shall be uniform throughout its substance.

The size and shape must be uniform throughout any series, but capable of variation at the will of the prescriber.

And these requirements must be met with as little expenditure of time as possible, both on commercial grounds and for the convenience of the patient.

The first requirements, those depending upon composition, are already removed from the province of the pharmaceutist, the Pharmacopœia having supplied us with a formula which leaves no difficulty with regard to the properties of the basis except its disposition to adhere to the mould. This adhesiveness is one great source of annoyance, and various methods have been suggested for overcoming it.

The suppositories, when cast in the usual metal moulds, frequently adhere so closely as to be torn in two when the mould is opened, and this is more especially the case if ample time cannot be allowed for them to become thoroughly cold and hard.

If moist clay be adopted as a matrix, there is little fear of the suppositories being broken in the extraction, unless they are moved before quite hard. They may be dug out with a stiff knife, but are not in condition for use without washing; and all this is wasteful of the most costly element in their production—time.

After various expedients had been tried, such as rubbing the metal mould with oil or glycerin, in the hope of preventing adhesion, I adopted, with the greatest satisfaction, little cones of tinfoil, setting them in the gun-metal mould; all chance of adhesion is thus prevented, and the foil is readily removed when the suppositories are cold, without any fear of splitting them. Having so far succeeded, I was tempted to return to the clay matrix, with the view of preparing a larger number at a time than my metal mould was constructed for. The foil cones are easily constructed so close as not to allow the escape of the melted material, even if they are not imbedded in an impermeable material; the tinfoil itself may therefore be now considered the mould, and the next problem is to find a convenient mode of supporting it during the process. The soft wet clay which I had been using was found inconvenient, from the foil adhering to the clay so closely that the suppository could not be removed before it was thoroughly hard, and then required to be dug out as before described. Trial was next made with several powdered materials, such as sand, French chalk, or powdered clay. It is difficult, however, to avoid the contamination of the suppositories with these powders, which are all objectionable, more especially the sand, besides which, they do not afford a support to the mould sufficiently firm to prevent it being bulged out of shape, and they were all in turn discarded; clay, in its solid form, either tough or hard, being much more suitable. There is nothing more simple than to take a box of clay and make conical holes in it, suitable for supporting the tinfoil moulds. I at first used moist clay, and kept it plastic by mixing with glycerin, and if the shape of the suppositories is to be changed from time to time, the plastic clay is most convenient, but if one form is adopted for general use, there is no objection to the clay matrix becoming hard, for if it cracks, that is of no importance, seeing that it is only used as a support for the tinfoil.

If the conical depressions are made in moist clay, they are most readily formed by using a model of a suppository as a dibble. One hole made too near another will bulge in the sides of its neighbor, and in that case it is necessary to put the dibble into each a second time after they have all been roughly formed.

The model of the suppository which is to be used as a dibble, and upon which the tinfoil moulds are to be formed, will now require a few words. If the usual conical shape is desired, it may easily be extemporized by softening the end of a rod of gutta-percha, or of a stick of sealing-wax, and pressing it into a conical minim measure; and other shapes may be readily formed from a piece of wood, no matter what kind, roughly cut into shape of a size larger than that ultimately required, putting it into the fire for a second or two, and dressing it into the exact pattern by the use of a file.

Supposing suppositories of the usual size and form are required, and that the model is ready, the tinfoil may be cut into convenient disks by pressing it upon a two-ounce pill-box, and cutting out with scissors; the foil being first folded, a dozen or more of disks may be cut at once; place the point of the cone in the centre of one of the disks, and fold the foil closely about it, avoiding wrinkles as much as possible; the foil mould is then ready for use, and may be dropped off the tip of the dibble into the clay stand. The moulds having been arranged in this way, and the requisite ingredients melted in a wide-mouthed bottle set in hot water, the moulds will be most conveniently filled by means of a common glass syringe, the piston being removed and an india-rubber ball substituted; the bottle being taken in one hand and the syringe in the other, the fluid ingredients are to be stirred with the syringe till they begin to thicken, and then transferred to the moulds by means of the syringe, the active constituents being kept thoroughly mixed through the mass during the operation, by stirring with the syringe between the lifting of each portion of the material from the bottle.

While the suppository is still soft, though not fluid, it may, if necessary, be removed from the clay by carefully lifting foil and all together, and if it is important to save time they may be immersed in cold water till quite firm, when the foil may be rolled off, and they are fit for delivery to the patient. Of course, if there is no need for hurry, they are just as well left in their stand till quite hard.

Any one who has experienced the same difficulty with the metal mould which I have done, will probably, with advantage, follow my example in adopting tinfoil, the original mould being simply used instead of a clay stand to support the foil.

The same proceeding exactly is adapted to the production of pessaries or suppositories of other sizes and shapes, probably also of medicated bougies, though with these I have as yet had no experience.

In all cases it is most convenient to operate with forms which are more or less conical, and with the apex rounded; a thimble illustrates the shape best suited for pessaries, and as it also affords a sufficient latitude of sizes, and is always easily procured, we cannot do better than extemporize a pessary-dibble with sealing-wax or gutta-percha and a thimble, in the same manner as was done for suppositories with a minim measure.

It will be observed that the materials are all such as are to be found in any shop or surgery, for a lump of carbonate of magnesia or of chalk may be used instead of clay. And all the operations are such that any one could undertake to perform with success at a first attempt. There is no highly-finished apparatus to be made, nor any delicacy of manipulation to be acquired, and on these grounds I offer these remarks to the notice of my brother pharmaceutists, who may now and then be annoyed at the intractability of the old method, while some impatient customer urges him to lose no time.

Grey Street, Newcastle, Oct. 16, 1867.

—*London Pharm. Jour.*, Nov., 1867.

ON GLYCELÆUM: A PROPOSED BASIS FOR OINTMENTS.

By T. B. Groves, F. C. S.

Some years ago, when stirring together on my plate a mixture of mustard, sugar, vinegar and olive oil, I observed a tendency towards combination, and on persevering with the process I eventually obtained a semi-transparent paste of soft consistence, which, when mixed with a further proportion of vinegar, gave an elegant emulsion. I subsequently found that by modifying my method I could obtain this result very readily. Since then I have, as occasion required, prepared a very useful salad paste, which, being composed of the simple materials common to all salad dressings, formed a kind of universal basis, and being destitute of vinegar, kept well for a length of time.

It was made thus:—

Take of Mustard,	ʒiij
Syrup,	℥j.
Olive Oil,	℥iij.

Mix the mustard and syrup in a mortar to a smooth paste, then add gradually, with constant trituration, the olive oil. When nicely made, it forms a soft paste which, after a few days' rest for the elimination of air bubbles, becomes nearly transparent. When mixed by gradual addition with vinegar and flavoring ingredients to taste, it forms, to my mind, an excellent and simple salad dressing. This is not strictly pharmaceutical, but it was out of this arose the idea of the subject of this paper—Glycelæum.

It of course soon occurred to me that other oils besides olive could be so emulsed, and that compounds so obtained might be made to serve the purposes of the surgeon or of the doctor—might be used to favor the assimilation of oil, or as dressings for wounds and such like. Mustard was, of course, inadmissable for either purpose. I must here observe that, if the ingredients for the salad mixture above referred to be made much thinner than in the recipe given, it will be impossible to mix them in a mortar by trituration, the same also if a much larger proportion of oil be used; but combination may readily be effected by stirring, or rather "slicing," with a flexible spatula. The pressure of the pestle seems to squeeze out the air from the emulsion as soon as formed. This is on a par with what I and doubtless others have remarked—viz., that the common liniment containing vinegar, camphor and turpentine emulsed with yolk of egg, is more readily mixed by simple agitation in a bottle than by working it in a mortar. The yolk must, of course, be thoroughly broken up, in order to destroy its structure and render it miscible with water.

To return from my digression. On making trial of the usual gummy substances, such as acacia and tragacanth, I found that this class of compound could not be formed by their aid; emulsions of the ordinary kind might be made, but not *paste* emulsions. The natural thing to do in such case was to separate in a pure form the emulsive principle contained in the mustard seed, and go to work with it; but before doing so I tried the finely powdered farina of other oil seeds, such as linseed and almond, and was gratified to find that either will answer the purpose as well as mustard. I have no doubt that all the oil seeds, when deprived of their oil by pressure and then reduced to powder, answer equally well, though perhaps not all with equal power. The meal of decorticated pressed sweet almonds is that which I prefer, and which I have used. Messrs. Barron, Harvey & Co., who express a good deal of almond oil, were kind enough to prepare for me a cake of this article. When powdered, it should be passed through a fine silk sieve—cypress or lawn; it refuses altogether to go through a fine wire sieve.

To prepare Glycelæum then:—

Take of	Almond Meal,	$\frac{1}{2}$ oz.
	Glycerin,	1 oz.
	Olive Oil,	3 oz.

Mix s. a. It may be effected in a mortar in the ordinary way up to nearly the end of the operation, but it is better, I think, to use the spatula and "slice" in the last addition of oil. It will then form a soft, semi-gelatinous paste, which, when mixed gradually with water or a watery fluid, forms readily an emulsion. The glycerin it contains being protected by the oil, it does not quickly deliquesce, though when exposed to the air for some time it does soften somewhat. It is, of course, unaffected by the ordinary temperatures of the body; if it were otherwise, its softness would be an objection to its use; as it is it leaves plenty of room for powdery admixtures of every kind.

This form may be varied in many ways—viz., the glycerin may be either pure or diluted, and may or may not in either case contain medicinal substances in solution. The olive oil may be substituted by another oil, or by a mixture of oils, or again by a balsam, an essential oil, or a hydro-carbon. All these may or may not contain other substances in solution. It is only essential to remember that the body, in the first place, must not precipitate emulsine; in the second place, must be a fluid. I have in several ways attempted to emulse lard. I have melted it and succeeded perfectly so long as it remained fluid, but if stirred after solidification the emulsion was at once "inverted," or, as Mr. Proctor styles it, converted into a "negative" emulsion, *i. e.*, the glycerin is emulsed in the fat, and not the fat in the glycerin.

The advantages I attribute to Glycelæum, as compared with ointments and with plasma, I imagine to be these. Ointments are greasy, prone to rancidity, do not "touch," in a strict sense, watery surfaces, and are not easily removed from the surfaces to which they become attached. On the other hand, they are cheap, they are fatty, and they are repellent of moisture.

The chief objection to plasma, of which I know little and therefore shall say little, is that it is dear. I have heard that in use it is troublesome, in consequence of its proneness to deliquescence. My other objection may seem fanciful, but it is a fact that I cannot look with favor on a dressing for wounds that does not contain some fatty substance. Fats have been used for that purpose from the very earliest ages. The use of oil is mentioned and recommended in the Bible, and fat in some form or other is still universally employed by men, civilized or savage, in the dressing of external wounds. Its great and overwhelming advantage is its cleanness in use. It is readily removed by sponging. It "touches" completely the parts to which it is applied. Glycelæum is cheap, it is easily sponged off, it "touches" wet surfaces and combines with them to form an emulsion, resembling somewhat in character the pus which nature pours out for the defence of raw surfaces. It does not deliquesce to a disagreeable extent, nor does it soften by the heat of the diseased parts. It is capable, as I have indicated, of an immense amount of variation. I have never observed it to become mouldy or rancid from keeping.

Glycelæum has been little tried as a remedy. I have had difficulty in finding persons to make trial of it. Dr. Tilbury Fox has, however, at Mr. D. Hanbury's suggestion, made some experiments with it, and reports "that he likes it very much. That it is a capital thing where it is a desideratum to get hardened parts into a more 'supple' condition." Although I can bring but one testimony in its favor, it must be allowed to be a first-rate one.

Still less trial has been made of Glycelæum as a vehicle for the administration of oils and balsams, though it would not be difficult to find stomachs that support with difficulty castor and cod-liver oils, and balsam of copaiba. As "oiled" melted butter is known to upset a weak stomach, whilst well-made—*i. e.*, well emulsed melted butter—does not, it might be inferred that an emulsed oil would in some cases agree with the stomach when the plain oil would not. I am convinced of this, that the Glycelæum copaibæ, stiffened with powdered cubeb, would form a more elegant and a more supportable electuary than the nasty and imperfectly mixed mass one commonly meets with.

The uses of these bodies in the cosmetic art will not, I presume, be lost sight of.

I have already alluded to the fact that it is to the emulsine contained in these oil-seeds we must attribute the extraordinary emulsive power of these vegetable powders. (Certainly no organic principle has been more consistently named than it.) This I have proved experimentally by preparing some of the substance and trying it in its pure state. I found that 5 grains dissolved in one drachm of water would emulse into a jelly four drachms of olive oil (using the spatula, not the pestle). I prepared the emulsine by digesting for a few hours powdered almond meal with tepid water, filtered and added to 3 measures of the filtrate, 5 measures of rectified spirit, collected the precipitate, and dried it at a temperature not exceeding 100°.

Having a few more minutes to spare, I will say a few words about the dietetic use of emulsine. I wonder it has not been pressed into the service of the infants. It is really a vegetable albumen, like it it is coagulable by heat, and contains a large proportion of nitrogen in a form available for the production of fibrin for the blood and muscles. It is contained, it is said, in almonds to the extent of 30 per cent., and is easily extracted therefrom. A tepid infusion of the meal, filtered, sweetened, and then evaporated at a temperature not exceeding 100° to a syrup, would not be unlikely to be a useful alimentary preparation.—*Chem. and Drug.*, Sept. 14, from *Trans. Brit. Conf.* 1867.

CAUSE OF DEATH FROM SNAKE-BITES.

To the Editors of the Pharmaceutical Journal.

Gentlemen,—Professor G. B. Halford, M. D., of the Melbourne University, has been investigating the cause of death from snake-bites, especially that of the cobra de capello, and although his investigations might be considered more within the province of the physiologist than of the pharmaceutist, I think a few extracts from them might be highly interesting to the latter.

The Professor directs his attention to the state of the blood after death, and in all cases finds it dark, very fluid, and without any tendancy to coagulate on exposure. He finds it to contain a large number of foreign cells, which, when highly magnified under the microscope, are seen to contain nuceli. His own words will probably best describe them.

"When a person is mortally bitten by the cobra de capello, molecules of living 'germinal' matter are thrown into the blood and speedily grow into cells, and as rapidly multiply, so that in a few hours millions upon millions are produced at the expense, as far as I can at present see, of the oxygen absorbed into the blood during inspiration; hence the gradual decrease and ultimate extinction of combustion and chemical change in every other part of the body, followed by coldness, sleepiness, insensibility, slow breathing, and death.

"The cells which thus render, in so short a time, the blood unfit to support life, are circular, with a diameter on the average of one seventeen-hundredth of an inch. They contain a nearly round nucleus of one two-thousand-eight-hundredth of an inch in breadth, which, when further magnified, is seen to contain other more minute spherules of living 'germinal' matter. In addition to this, the application of magenta reveals a minute colored spot at some part of the circumference of the cell. This besides its size, distinguishes it from the white pus, or lymph corpuscle.

"Thus, then, it would seem that as the vegetable cell requires for its growth inorganic food and the liberation of oxygen, so the animal cell requires for its growth organic food and the absorption of oxygen. Its food is present in the blood, and it meets it in the lungs; thus the whole blood becomes disorganized, and nothing is found after death but dark fluid blood,—its fluidity indicating the loss of fibrine, the dark color its want of oxygen, which it readily absorbs after death."

The Professor considers this a probable clue to the further study of zymotic diseases and of cholera especially, the effects bearing strong comparison.

Faithfully yours,
CHARLES SYMES.

Birkenhead, August 20th, 1867.

—*Lond. Pharm. Jour., Sept.*, 1867.

ANALYSIS OF ORDINARY COMMERCIAL SPECIMENS OF JALAP, SHOWING THEIR RELATIVE VALUE IN PROPORTION OF RESIN OF JALAP, COMPARED WITH MARKET PRICE.

By Mr. Alfred Southall (Birmingham).

	Description.		Resin, per cent.	Market Price. s.	d.	
No. 1	Jalap,	Tops	5	0	4	per lb.
" 2	"	"	12	0	5	"
" 3	"	Tampico	9½	0	10	"
" 4	"	"	10½	1	0	"
" 5	"	"	30½	1	0	"
" 6	"	"	29	1	6	"
" 7	"	"	12½	1	6	"
" 8	"	"	33¾	2	0	"
" 9	"	"	27	2	0	"
" 10	"	Vera Cruz	15½	4	0	"
" 11	"	"	17½	4	0	"
" 12	"	"	17¼	4	0	"
" 13	"	"	12½	4	0	"
" 14	"	"	23	4	4	"
" 15	"	"	20¼	4	6	"
" 16	"	"	16¾	4	10	"

The importance of maintaining a uniform medicinal value in the drugs ordered by the Pharmacopœia cannot be over estimated. The British Pharmacopœia has, in the instances of opium, cinchona bark, and scammony, given a standard value for each of these remedies; but I think it might with great advantage have included some other drugs, and among the rest the subject of this analysis. That market prices are frequently no guide to the pharmaceutist, the analyses which were offered at the last meeting of this Conference of various samples of opium and scammony, sufficiently testified, and the additional proof offered by the specimens of jalap herewith amply confirm the statement.

In order to ascertain the medicinal value of the supplies of jalap as found in the shops of pharmaceutists I procured five specimens of powdered jalap at different establishments, and found the result in per-centage of resin as follows:—

No. 1. 13 per cent. of resin.
" 2. 15 " "
" 3. 9½ " "
" 4. 16½ " "
" 5. 17 " "

The commercial value of jalap imported from Tampico is much inferior to the kind imported by way of Vera Cruz; but an average of seven samples of each kind here analyzed show that the Tampico is richer in resin than the Vera Cruz, the average in the one case being about 22 per cent., and in the other 17½ per cent.

I have made an experiment with the purgative effects of the two varieties, and find them much the same. The resin from Tampico jalap is somewhat darker than that from the Vera Cruz variety, and has a distinctive peculiarity of smell, but I have not discovered any difference in chemical character.—*Chemist and Druggist*, Sept. 14, 1867, from *Trans. Brit. Conf.* 1867.

VERATRUM VIRIDE.

BY CHARLES BULLOCK.

In response to the 15th query, referred to me at the last meeting of the Association, I would respectfully report that the whole subject has been submitted to a second investigation, the results of which tend to confirm my former experience of the existence of two alkaloids in Veratrum viride.

I have nothing farther to add to my remarks published in the American Journal of Pharmacy [vol. xxxvii., page 325], concerning the characters of these two alkaloids, except to mention the peculiar odor of the alkaloids when recently precipitated and still moist—an odor recalling faintly that of the alkaline hypochlorites. This character is more marked in the product soluble in ether.

I would also call attention to the distinctiveness of Trapp's test for veratria—the rich color, resembling a solution of permanganate of potassa, afforded by heating veratria in hydrochloric acid is not evanescent. In a test tube, protected from dust and air, the color remains unchanged for two months.

The resin of Veratrum viride, when precipitated from a concentrated alcoholic extract of the root by pouring it into water, retains the alkaloids with great persistence. The following manipulations were adopted for its purification: After treatment with ether until exhausted by that menstruum, the resin was dissolved in alcohol and re-precipitated by pouring into acidulated water. This operation was repeated several times; the resin was then dried, powdered, and washed on a filter with acidulated water until the washings were no longer disturbed by neutralization with an alkaline carbonate.

The resin as thus purified had the following characteristics:

On platinum foil—fused, intumesced, and carbonized.

With test paper—the alcoholic solution was neutral.

With hydrochloric acid—does not dissolve and produces no change of color; on heating it imparts a brown color to the acid.

With sulphuric acid—partially dissolves, giving the usual dark brown color of carbonized matter to the acid.

Physiological Effects. One-third of a grain of the resin, dissolved in alcohol, was taken every half hour until one grain was administered. No effect on the circulation or other result was noticeable.

On a second trial the same dose was administered at the same intervals until two grains were taken. No effect on the pulse in force or frequency was observed; the only result—an unexpected one—was great prostration of digestive functions, subjecting the experimenter to a temporary but severe attack of dyspepsia. Not being familiarized to this *popular* complaint the experiment was not pushed farther.

In conclusion, the opinion derived from the investigation leads to the belief that the resin of Veratrum viride, when purified from adhering alkaloids, does not possess the sedative action on the circulatory system so strongly marked in the plant, and which, it has been shown, is possessed in a marked degree by the alkaloid from the plant insoluble in ether.

The chemical relation, which the alkaloids bear to veratria, I have not been able to investigate.

Philadelphia, September, 1867.

—*Proc. Am. Pharm. Association*, 1867.

ON COMMERCIAL JALAP.

By Edward R. Squibb, M. D.

A few notes made during the past six years upon the character of this drug as casually met with in the largest market of this country, present some points well worthy of serious consideration.

Ordinary merchantable jalap, from low grade through fair and good up to prime quality, yields from 11 to 16·25 per cent. of resin, and the proportion of resin is the true and only standard of quality and value. From this it is seen that the drug is so variable in quality as to have a range of at least 5·25 per cent. on 16, or that some lots are one-third more valuable than others. This taken in connection with the circumstance that the stock in trade is always below the average, and the better qualities very rare, serves to explain the fact that in its more legitimate channels of use this drug, within a few years past, has rapidly lost reputation. During the period of this rapid decline in quality the price has more rapidly advanced, and this condition is so great a temptation to adulteration and falsification that the markets rarely withstand it. In the case of jalap the substitution of other roots, the admixture with rootlets and immature tubers, and the sending to market imperfectly dried, have all been partially successful, but the drug is so definite in its physical character that such falsifications could not be practiced to a great extent without great damage to the market prices so long as the article remained in first hands, and could not be got into the drug mills. Some other mode of falsification, therefore, seemed to be required, and this has probably been found in a more or less partial exhaustion of the root, without breaking it up, before it is sent from the place of production.

In the early part of 1861 a lot of 18 bales, of about 200 lbs. each, arrived in this market, and was powdered and dispensed over the country, containing only 1·8 per cent. of resin. The tubers were fine and large, of good bright color, good odor, a little light in weight, and of a very tough consistence and starchy looking. They were very thoroughly cut in the direction of the long diameter, but the parts not separated, and still the drying appeared imperfect. No fair judge of jalap would have bought this lot at any ordinary price, and it was probably sold at a low price, and bought on speculation by one or more houses whose market was for powdered jalap, and near to the consumers who would not be likely to be over critical. This lot was traced to a large drug mill, and there lost sight of because it made a very handsome powder not distinguishable from better grades.

Later in the same year a lot of 7 bales, of about 200 lbs. each, inferior in appearance to the last lot, came consigned to a large drug house, and was sold for powdering. Much of this looked unlike jalap, but was probably the rootlets, and this portion did not appear to have been subjected to fraudulent treatment. This lot yielded 2·22 per cent. of resin, all of which appeared to be true jalap resin, though of lighter color than is usual.

In the early part of 1863 another lot, of unknown size, but probably not very large, was encountered, looking bright and well—indeed much too clean and bright—tough in consistence, devoid of resinous appearance, and light in weight. This contained 3·3 per cent. of resin. What became of it is not known.

Within the past three months a lot of 95 bales, 25 of which are said to have been re-shipped to France, was offered by broker's sample in this market. Although recognized at first sight as true jalap, unmixed, and perhaps not far out of the common range of the common market, there was yet something amiss about it to the practised eye which first saw it in the broker's hands. It was tough and light, too starchy looking, and had too strong a jalap odor. To the writer's less experienced judgment it at first did not seem to be much out of the way in appearance, but upon assay it proved to contain about 8 per cent. of resin. The tubers of the sample were sawed in two, and one-half used for assay. The other half is presented for inspection with this paper. These four instances coming naturally and unsought for, within the observation of one who sees so little of this drug as the writer does, leads to the inference that these were not the only cases of this kind which occurred within the past six years; and the testimony of so good an authority as Mr. Daniel Hanbury, of London, has recently been given to the variable and precarious character of this drug, as found in the market with which he is so familiar.

In reasoning upon the condition of jalap here mentioned, with the specimens under close observation, the writer has arrived theoretically at the conclusion that all such jalap is partially exhausted in Mexico before being exported, and that increasing skill in this practice and close calculation of the neat results in the markets is leading those who practice this fraud to a more and more limited exhaustion, in order better to escape detection. The facility of exporting alcohol cheaply from this country adds to the probability of the view here taken.

An assay of jalap is one of the simplest and easiest processes in applied Pharmacy, and no pharmacist should buy or dispense powdered jalap without previously testing it. About an ounce of the powder, carefully weighed to within a grain, is thoroughly wetted with say 1½f℥ of stronger alcohol, and the mixture transferred to a small funnel arranged for percolation. Stronger alcohol is then poured on top until the percolate ceases to give a cloudiness, when a drop is allowed to fall into a vessel of water. The percolate is then evaporated to a syrupy consistence, and a little water carefully added to it while hot. It is then poured into 4f℥ of cold water, with active stirring, and the precipitated soft resin collected in a capsule and dried with constant stirring until a thread of it drawn out by the stirrer is perfectly brittle. The capsule having been previously tared, it is now very easy to obtain the weight of the dry resin, and calculate its percentage proportion to the powder. As the ordinary merchantable root yields from 11 to 16 per cent., and as this loses from 10 to 14 per cent. in powdering, any sample of powder that does not yield over 12 per cent. of dry resin should be at once rejected as unfit for medicinal use.

Brooklyn, N. Y., Aug. 21*st*, 1867.

—*Proc. Am. Pharm. Association*, 1867.

THE SULPHUR PRODUCE OF ITALY.

The sulphur mines of Italy have long been famous for their yield, and their present productiveness fully sustains their reputation. They are now producing something like 300,000 tons per annum, which, taken in the crude state, represents a money value of about £1,200,000. But their yield has only become so enormous in the course of years, the average yield for the year 1830 being but one-tenth of the present yield. The greater part of the above quantity is derived from Sicily; the Romagna, however, commenced to increase the supply some seven years since, and in 1862 was contributing about 8000 tons per annum, and this quantity has since been increased. For the last fourteen years an improved method of separating the sulphur from the accompanying limestone has been successfully practiced in Sicily. The separation of the sulphur from gangue is always effected by liquation, the necessary heat for the fusion being obtained by burning a portion of the ore. This operation, which was formerly effected in small cylindrical open kilns, is, by the improved process, performed in heaps, which are often four hundred times the capacity of the kilns. The ore is arranged in a manner similar to that adopted in charcoal burning, the air being excluded by an impermeable covering of earth. The loss occasioned by the formation of sulphurous acid has been greatly reduced by the new process. The production is increased by one-fifth, and the new heaps can be placed in the vicinity of houses and gardens without objection. Under the old system it was necessary to keep the heaps several miles away from dwellings and vegetation. The further advantage of the process is that the heaps may be fired at any time, instead of large masses of ore being kept in reserve for ignition at a particular season of the year. Beyond this the process, which formerly was one of the most deadly nature, has been converted into one almost free from danger to the workmen.

A large portion of the island of Sicily is occupied by the gypsum and sulphur bearing formation, which extends from Mount Etna to the neighborhood of Trapani. The rate of productiveness diminishes towards Trapani, Caltanisetta and Girgenti boasting the best mines, Catania and Palermo those next in importance, whilst the least yielding are in the province of Trapani. In Sicily, as well as in the Romagna, the gypsum formation includes limestones, clays which are more or less marley, and beds of gypsum. In the latter rock, as well as in the limestones, the sulphur is found as an uniform or irregular mixture, sometimes concentrated in small parallel seams, and occasionally crystallized. In the latter case it is often associated with sulphate of strontia or celestine. The sulphur occurs in a different manner in the clays and slates, being found concentrated in globular masses. This method of occurrence is also common to all the sulphur mines of the Continent which are contained in argillaceous strata. Only a portion of the sulphur obtained is refined on the island, the greater part being exported in the crude state. For commercial purposes it is classified into three general qualities, which are further divided into seven sub-classes. There are about fifty mines at present at work in Sicily, and the number of hands employed is over twenty thousand.

The Romagna Sulphur Mining Company possesses eight mines, five of which are in the province of Forli, Romagna, whilst three are at Monte Feltre, in the province of Urbino and Pessaro, in the Marches. The refined produce is exported chiefly from Rimini, where the refining works are situated, to the principle centres of consumption among the large towns of Italy. Refined sulphur is used in various manufactories for making sulphuric acid, and for several years past a new use has been found for it in the sulphuration of vines. In the course of scientific progress the general process, to which we have already alluded, has been improved in many minor details. But beyond this, an entirely new process is just reported to have been introduced by M. Brunfaut, a Belgian. The average composition of the sulphur stone of Romagna is, for every 100 parts, 30·60 of sulphur, 26·80 of lime, 41·20 of alumina and silica, and 1·40 of water. By the ordinary method of extraction, only 10 of the 30 parts of sulphur are obtained; there is, therefore, a loss of upwards of 20 per cent., which, of course, must influence not only the profits, but also the price of the article. These defects in the system appear to have been completely obviated by M. Brunfaut, who is said to have obtained a yield of 25 per cent. instead of 10.

As already observed, the sulphur is contained only in a state of mixture in the Romagna stone, and not being in chemical combination with any substance, is easily separated by fusion. The melting point of sulphur being extremely low, fusion may be effected by hot-air or by steam, instead of in kilns or even heaps, where the excess of heat converts a large portion of the substance into sulphurous acid. Taking advantage of this property of sulphur, M. Brunfaut employs an apparatus which consists of a horizontal cylinder, containing an archimidean screw throughout its whole length. The cylinder is made to revolve more or less slowly, according to the nature of the mineral to be treated. The sulphur ore is poured in through a funnel at one end of the cylinder, and when it has sufficiently undergone the action of the apparatus it is led out at the other end. The temperature in the cylinder is maintained by hot-air or steam, which is introduced under a pressure of three atmospheres. By this machine 150 cubic metres of the mineral are reported to be disposed of in twenty-four hours. This economical method of extracting sulphur from its minerals is a matter of great importance to Italy, which is so rich in that valuable substance.—*Jour. Franklin Institute, Oct.*, 1867.—*Lon. Mech. Mag., Aug.* 1867.

SOLUTION OF CHLORINATED MAGNESIA.

By Robert F. Fairthorne.

Thinking that this preparation, from the possession of certain properties, has advantages over the solution of chlorinated soda, known by the name of "Labarraque's Disinfecting Liquid," I would suggest the following simple formula for making the same: Dissolve 8 ounces sulphate of magnesia in two pints of water. Triturate in a mortar 4 ounces and 1 drachm of chlorinated lime with an equal amount of the same fluid. Mix the solutions together and agitate occasionally.

After standing twelve hours pour off the supernatant liquid.

This consists of a solution of chlorinated magnesia containing a small amount of sulphate of lime. I found, by adding solution of caustic soda, that the precipitate produced thereby from 4 ounces of the liquid, when dried, weighed 35 grains; therefore each ounce contains a little less than 9 grains of magnesia.

The superiority over the corresponding solutions of soda and lime as a remedial agent, consists in the base (magnesia) which it contains not being caustic in its nature. Therefore particularly adapted either for internal use or as an application to delicate tissues where the effect of chlorine or its compounds only is required.—*Jour. Franklin Institute, Oct.*, 1867.

CRYOLITE AND ITS PRODUCTS.

By Evan T. Ellis.

This remarkable mineral, which, as you will observe, is partially transparent, of a vitreous lustre, and brittle texture, is a fluoride of sodium and aluminum, containing—

13	per cent.	aluminum,
34	"	sodium,
53	"	fluorine.
100		

It is found in an immense deposit in Greenland, at Iviktout, at the head of Arksut Bay, near Cape Farewell. The first discovery was made by one of the missionaries, who carried a specimen with him to Copenhagen. Its true composition was determined by Vanquelin.

There is a bed eighty feet thick, and three hundred feet long, at the above-mentioned place.

It is frequently associated with the salts of metals, and beautiful crystals of galena, or sulphide of lead, chalybite, or brown spathic carbonate of iron, resembling spar in lustre, copper pyrites with silver, iron pyrites, &c., are found therein, arranged in masses segregated from the white, transparent, ice-like cryolite.

It remained for the "Pennsylvania Salt Company" to introduce to our country this valuable material. This energetic Company, whose works are in western Pennsylvania, has secured the privilege of using a large part of all that is mined, and has, within two years past, imported into Philadelphia thirteen cargoes, or nine thousand tons, which have been sent to their works for manufacture.* The greater portion of this has been used for their patent Saponifier. They are now devoting their attention to the preparation of caustic soda, carbonates, and other salts of soda, sulphate of alumina, &c.

Soda is obtained from cryolite by simply mixing with lime, and subjecting to heat. The fluorine combines with the calcium, forming fluoride of calcium; while the remaining metals absorb oxygen from the air, and become alumina and soda. Carbonic acid is then passed through the solution, forming, with the sodium, a carbonate of soda, which remains suspended, while the alumina, being insoluble, is deposited at the bottom of the vessel. The carbonate of soda is deprived of its acid by means of lime in the usual manner, and thus rendered caustic, and fitted for the use of the soap-maker.

One hundred pounds of cryolite yield—

44 lbs. dry caustic soda,
or 75 " " carb. "
or 203 " crystal carb. "
or $119\frac{1}{2}$ " bicarb. "
and 24 " alumina.

The sulphate of alumina contains 2·82 of sulphuric acid to 1 equivalent of alumina, therefore this is more than a neutral salt (3· being neutral), which is very desirable for manufacturers of paper, calico printers, &c.† It is also entirely free from iron, another very important characteristic.

There is another very important use to which cryolite can be applied. By a fusion of one part of cryolite with from two to four of pure silex, a beautiful glass is formed, susceptible of mould and polish, and capable of being manufactured into an endless variety of useful and ornamental articles, and probably many utensils for chemical and pharmaceutical use will be made of it. A company has been operating in Philadelphia for some time past, on an experimental scale, entitled the "Hot Cast Porcelain Company." The results have been so satisfactory that they have now taken a large establishment, and will be prepared to carry on the manufacture quite extensively. The cost is, at present, from ten to twenty per cent. higher than ordinary flint glass. The ware seems to be stronger than glass.—*Proc. Am. Pharm. Association*, 1867.

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* They will import this year (1867) eight thousand tons.

† The English often contains as high as 3·27 of acid.

SWEET SPIRIT OF NITRE.

By A. Theod. Moith.

Not many apothecaries will be able or willing to prepare sweet spirit of nitre according to the formula laid down in the Pharmacopœia, unless they be the owners of a well appointed laboratory.

It is notorious that nearly all the sweet spirit of nitre sold by druggists for 85 cents per pound does not come up to the tests of the Pharmacopœia. Unless a physician insists peremptorily on having Dr. Squibb's nitre, it is not likely that the apothecary will procure the proper article: as a pure article like Dr. Squibb's, which I have used exclusively for the last four years, costs $1.46 per pound, the difference is too great for most.

In this dilemma between dispensing a cheap poor article and a good one, comes to our relief, in my humble opinion, a formula by Professor Theoph. Redwood, given in the July number of the Druggists' Circular.

Struck by the *rationale* of this formula, I prepared it by this formula three or four times, and the spirit of nitre resulting answers fully all the tests of the Pharmacopœia.

Any one with the slightest claim to the name of apothecary will be able to perform the task easily, cheaply, and without any risks. A retort, a glass receiver marked with a strip of paper, pasted on, to indicate 12 and 15 ounces, a Fahrenheit thermometer, besides a stove, and a stove kettle for water-bath, are all that are necessary in the way of apparatus.

Around a pencil I coiled loosely a cylinder of fine copper wire (No. 22 will do), 2 oz.; remove the pencil, and introduce or slip the wire into the retort. Pour on this, through a long-necked funnel, a mixture made as follows:

To 1 pint stronger alcohol pour slowly, under constant stirring, 2 fluidounces sulphuric acid, sp. gr. 1·843, and then 2½ fluidounces nitric acid, 1·42; place the retort in the water-bath, connect with the well-cooled receiver; place the thermometer in the water-bath, and at the temperature of 175° F. distil over 12 fluidounces. Reduce now the water in the water-bath, with enough cold water, to the temperature of 60° or 65° F., and pour through the funnel into the retort ½ fluidounce more nitric acid, and resume the distillation till 15 fluidounces are in the receiver. This ether mix with 2 pints stronger alcohol.

Remove the copper wire from the retort, wash well, and keep it for the next operation.

The cost of the three pints of ether will be not over $1.77, and it answers all the tests of the Pharmacopœia.

For my part, I herewith tender to Prof. Redwood my obligation for his disinterested labor and genial character.—*Proc. Am. Pharm. Association*, 1867.

ON THE RELATIVE VALUE OF THE RHIZOMA AND RADICAL FIBRES OF PODOPHYLLUM PELTATUM IN THE MANUFACTURE OF PODOPHYLLIN.

By Wm. Saunders.

In commerce it is well known that samples of the rhizoma of *Podophyllum peltatum*, freed from the radical fibres, are preferred, and command a higher price; and also that the presence of an unusually large proportion of fibres is regarded as an evidence of inferiority. This preference may, in some cases, originate from the fact that the fibres are often associated with a considerable quantity of dust and other foreign matter, but however clean they may be made, the prejudice still exists in their disfavor.

To determine how far this objection is grounded on any deficiency of strength in the fibres as compared with the rhizoma, the following experiments were tried:

Eight ounces of the rhizoma, carefully freed from fibres, were ground in a Swift's drug mill sufficiently fine to pass through a sieve of twenty-five meshes to the inch. Eight ounces of root fibres, free from rhizoma, were treated in a similar manner. These were each moistened with four ounces of alcohol, and packed in separate percolators. After macerating for twenty-four hours, fresh alcohol was added in small quantities at a time, until twenty ounces had passed through each, when the material was found to be exhausted.

The tinctures were evaporated to the consistence of syrup, and precipitation effected with water alone, according to the United States Pharmacopœia, when the precipitates were carefully collected and dried. From the rhizoma the yield was one hundred and thirty-seven grains, and from the radical fibres one hundred and thirty-seven and a half grains,—showing that there is no reason for regarding samples of root containing a large amount of fibres as in any way inferior, provided they have been carefully cleaned.—*Proc. Am. Pharm. Association*, 1867.

BITARTRATE OF POTASH, TARTRATE OF POTASH AND SODA, AND TARTARIC ACID, FROM CATAWBA WINE.

By E. S. Wayne.

These specimens are prepared from the crude tartar deposited by Catawba wine (a specimen of which is herewith sent). It is a well known fact that Catawba wine deposits as much tartar as European wines, and from the large quantity now produced annually, a large portion of the cream of tartar consumed in the United States might be produced, if the wine-growers would take the trouble to collect it. A large portion of it they throw away in the washing or cleaning of the wine casks, and others refuse to remove it, under the impression that it is beneficial to the wine to let the accumulation remain. I have been endeavoring for some time past to encourage the saving of it, and have made the specimens sent for the purpose of showing to the wine-growers here what can be done with it, and to interest them in saving all that they may make; and hope at the next meeting of the Association to report a favorable progress.

The cream of tartar specimen is crystalline, not powdered. It was made after the following manner: The crude tartar was placed in a vessel, and water added, less than sufficient to dissolve it. It was then heated, and carbonate of soda added until the acid was neutralized, and the double tartrate of potash and soda formed; the solution then filtered, and the coloring matter removed by percolation through animal charcoal.

A portion of this was then evaporated to a crystallizing point, set aside, and produced the sal Rochelle.

The mother liquor from the above, with the other portion of the liquor, was then used for obtaining the cream of tartar and tartaric acid.

To a portion of it hydrochloric acid was added, which caused a precipitate of bitartrate of potash, as a crystalline powder. This was drained on a filter, and then washed with distilled water and dried.

The tartaric acid was made by precipitating tartrate of lime, by solution of chloride of calcium, from the other portion of the original liquor (solution of sal Rochelle), the resulting tartrate of lime washed, and then decomposed by sulphuric acid, the sulphate of lime separated by filtration, and the solution of tartaric acid evaporated to a certain point, so as to deposit any dissolved tartrate of lime, then filtered, and again evaporated and crystallized.

Cincinnati, Aug. 29th, 1867.

—*Proc. Am. Pharm. Association,* 1867.

QUICKSILVER IN NORTH CAROLINA.

By E. S. Wayne.

The specimen of quicksilver ore was handed to me for examination by J. S. Bonham, of Concord, Tenn. The locality in which it is found is in Macon county, Tenn., near the dividing ridge that separates the waters flowing into the Atlantic and Gulf of Mexico, and forty miles from Wall Hollow, S. C., and thirty miles from the line of railroad from Cincinnati to South Carolina. The specimen is a talcose rock, containing quicksilver in the metallic state. From the description given to me, there is an immense vein of the material. By analysis I found that it yielded 7½ per cent. quicksilver (150 pounds to the ton). From the appearance of the specimen when handed to me, and the statement made by the party that it contained quicksilver, I thought that it was merely a conjecture upon his part, but analysis proved the correctness of the statement, both by wet and dry assay. A portion of the ore, placed in a glass tube and heated, will quickly show condensed globules of mercury, and all that would be required to separate the metal from gangue, is simply retorting it.—*Proc. Am. Pharm. Association*, 1867.

AMERICAN OPIUM.

By E. S. Wayne.

The specimen herewith sent was obtained from the white poppy by Dr. H. Black, of Bolivar, Tenn., who for several years past has turned his attention to the culture of the same, and the collection of opium from it. The specimen is of this year's growth. The quantity made by him this year was but small, ill health preventing his attending to it. He says that, in collecting it, he incises the capsule with a shallow cutting instrument, that merely cuts through the outer skin, for should it be cut completely through, the opium falls into the cavity of it, and is lost. The incisions are made early in the morning, and the accumulated opium scraped in the evening. I have tested the opium as to its morphia value by Dr. Riegel's method, a modification of Guillermond's. The obtained morphia was washed with water to remove adhering meconate of ammonia, and with ether to remove narcotin. The yield of morphia by this process I found to be 10·2 per cent. The morphia in the box with specimen is the yield; it has been re-crystallized.—*Proc. American Pharm. Association*, 1867.

ON THE USE OF OXALATE OF IRON IN MEDICINE.

By G. G. C. Simms.

It occurred to me, after having decided to attend this meeting, that I might present something here worthy the notice of this learned body. I was aware that a chemical, in daily use in the District of Columbia, and with which the pharmaceutists and physicians of Washington are as familiar as with any other article of the Materia Medica, was not to be found in any of our text books or treatises on chemistry or medicine.

I had thought that, in presenting here a sample of Oxalate of Iron, I would be introducing something new to the profession, as well as something which would redound to the credit of one of our able, but over-modest chemists.

I soon learned, though, that this article had already been brought to the notice of this Association some years ago, but for some reason, unknown to me, little or no notice was taken of it; and, a few months ago, an English pharmaceutist, it seems, claimed the honor of its discovery, and made known its valuable properties as a medicine.

I deem it, therefore, eminently proper that the claim of Dr. Schaeffer, for first using Oxalate of Iron and making known its invaluable medicinal properties, as well as other useful purposes to which it may be put, should be heard in this Association;

First, That it may be brought prominently before the profession, medical and chemical;

Secondly, That the question as to its paternity may be settled forever.

Having learned, several years ago, that Dr. Schaeffer, Professor of Chemistry in the "National Medical College of the District of Columbia," introduced the article under notice to his medical friends as possessing peculiar and very desirable properties in the treatment of disease, I addressed a note to him, requesting that he would give me a history of its introduction into medicine, its medical properties, &c., &c.

I desire, for the information of the members of this Association and for that of the medical profession at large, both of the Eastern and Western Hemispheres, to read Dr. Schaeffer's letter to me, in reply to my note. It will, I am sure, be found interesting to all who may read or hear it read.

I can safely say that Oxalate of Iron has been constantly used as a medicine in the District of Columbia during the last ten years.

Of its medical and chemical properties I will let Dr. Schaeffer speak. The formula for its preparation may be found in a little book, entitled "Non-officinal Formulæ in local use in the District of Columbia."

I would further observe, in addition to what the Doctor says, that pure glycerin seems to me to be the best vehicle in which to administer it.

Washington, D. C., Sept. 5th, 1867.

Dear Sir:—In answer to your inquiry, I send the following particulars in regard to the introduction of the Oxalate of Iron into medical practice. In the month of May, 1854, I had been using the "Pulvis ferri." I had found certain objections to it which I thought might be obviated by the use of a pure oxide of iron for reduction. In looking about for such a pure oxide, easily and cheaply prepared, I found no one answering all ends so well as that produced by the process of Vogel. This consisted in precipitating a solution of ordinary proto-sulphate of iron by oxalic acid. The filtered solutions exclude all insoluble matter, and the precipitated oxalate is nearly insoluble in the remaining free sulphuric acid. It needs but sufficient washing and subsequent drying to obtain the oxalate in a state of purity and of constant composition. This salt gently heated, with exposure to the air, takes fire, or may be kindled, and then continues to burn until the whole becomes converted into impalpable peroxide of iron. This cheap, rapid and perfect method of obtaining a perfect oxide of iron, free from all grit and eminently fitted for all the finer polishing purposes, had led to the use of this article for polishing the finest optical glasses in the most renowned European establishments. It may be remarked, by the way, that by heating the product to a higher temperature, a much harder substance may be obtained, useful rather for grinding than for polishing purposes. By adding salts of alumina, chromium and other similar salts to the iron solution, we may obtain in the final result—using sufficient heat—products nearly, if not quite, equal to emery, and of extraordinary fineness.

Having obtained the oxalate and examined its properties, it at once occurred to me that this salt itself would be an excellent form, by means of which, to introduce iron into the system. It was a proto-salt, unalterable, cheaply made and quite pure.

The soluble proto-salts of iron are too astringent and liable to rapid alteration. Even the less soluble salts undergo the change so quickly that they must be protected by some extraneous substance, intermixed or coating their preparations.

Struck with these obvious advantages, I commenced to use the salt myself. Being so very insoluble, I placed the dry powder upon the tongue and washed it down with water, and I believe that, in the extended use which has since been made of it, this is still the favorite mode of administration. I soon found that, in doses of two to three grains thrice a day, all the tonic effects of iron were more rapidly produced upon the system, than by any ordinary dose of the iron preparation which I had used. It was quite easy, by increasing the quantity, to stimulate the capillary circulation to the extent of producing an itching over the whole surface of the body. Instead of being astringent, with inactivity of the bowels originating from want of tone, it soon produced healthy and natural passages. The prolonged use of this oxalate will, however, give rise to a peculiar kind of astringent action which should be taken into consideration.

Having thus satisfied myself that the Oxalate of Iron would prove a useful article of the Materia Medica, it was communicated to some of my medical friends, and ever since then it has been in constant use in this city.

Several years ago a gentleman of this place requested an account of this article to be read before the National Pharmaceutical Convention, meeting that year in Philadelphia. My friend, Dr. Craig, who had become interested in the matter, was asked by me to prepare this notice, which I did not wish to make myself. The paper, it seems, was never read, but the preparation excited some attention. In the March number of the American Journal of Pharmacy, for this year, there is an article, "Oxalate of Iron—a New Tonic," in which this same substance is noticed, as prepared in a far less economical and perfect way. A note by the editor gives credit to Dr. Craig for having "recommended it as far back as 1858."* This mistake has no doubt arisen from the facts stated above. As the article is now in common use here, and as its merits have been fully recognized by medical men, it seems but an act of justice that I, who first prepared, used, and introduced it to the notice of medical men, should have due credit given me. Since the first use of the Oxalate of Iron it has been ascertained that, in cases of excessive irritability, when ordinary preparations of iron could not be tolerated, the oxalate was taken with the greatest benefit.

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* [In a note received by the Editor, dated September 5, 1867, referring to the foot note in this Journal, above alluded to, he says: "The only occasion on which I had the pleasure of meeting you, I took the means of calling your attention to a notice prepared by Dr. Craig of my introduction of this substance into the Materia Medica in the year 1854. I never could learn why the notice sent to the Annual Meeting in Philadelphia was not published. That I called your attention to it, as above mentioned, I am quite certain." Now, we do not doubt that Dr. Schaeffer states the facts, nor do we understand that he means to infer that the "notice" was placed in our hands, but certain it is, at this late date, we have no recollection whatever, either of the interview or of ever having

The very beautiful color of the oxalate iron would at once suggest its use as a pigment. It does not seem capable of mixing well with gum and similar vehicles, making a somewhat curdy result, but such as it is I have a specimen which, for thirteen years, has kept quite unchanged. With oil it is so transparent as to be utterly useless.

From two analyses I have found that the salt, prepared as above described, is without water of crystallization. This is a question which canbe easily determined by experiments.* The powder is uniformly crystalline, and, from its unalterability, I consider it one of the best means of obtaining a given quantity of a proto-salt of iron for purposes of chemical analyses.

Respectfully yours,
Geo. O. Schaeffer.

To Mr. G. G. C. Simms.

ONTARIO
COLLEGE OF PHARMA
44 GERRARD ST.
TORONTO.

Varieties.

A valuable Antiseptic.—If all that Mr. W. L. Scott claims for the bi-sulphite of lime be realized in practice, it is likely to be an agent of whose uses we may often avail ourselves in practice with advantage.

"Beef-tea or broth, in hospitals or otherwise, may be prevented from turning sour by stirring in a few drops of the bi-sulphite of lime solution

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seen the paper, and disclaim absolutely any intention of injustice to his rights as a discoverer of the therapeutic merits of the oxalate of iron. On the contrary, when the article of Mr. Reynolds was copied into the Journal, we asserted the claims of the only name we then knew in connection with the medical use of this salt at Washington, which, as the paper of Mr. Simms explains, was not the correct one.—Editor.]

* According to Gmelin (Handbook, vol. ix., p. 156, 1855) artificial oxalate of protoxide of iron contains 2 eq. of water for each eq. of base; whilst the native oxalate (Humboldtite) is only sesqui-hydric.—Editor.

to each pint of the soup; and the same plan will unable us to keep jellies, which ordinarily decompose so rapidly in the organic germ-laden air of the sick-room, for many days unimpaired; these are, in my opinion, considerations of some moment in all circumstances, but most especially in the habitations of the poor. Clothes or matting, soaked in the same solution and hung up, act as disinfectants of the most effective kind, and do not exhale the peculiarly unpleasant odor of carbolic acid, or the irritating vapors, so distressing to the bronchial system, of the chloride of lime. I have successfully employed the bi-sulphite of calcium for the preservation of numerous anatomical and other specimens, as it does its work perfectly, and without occasioning the great changes of color and contraction of muscular structure so frequently produced by ordinary antiseptics; moreover, its special advantage over the preparations of mercury and arsenic lies, in my thinking, in the fact that it is not poisonous, and can therefore be handled with perfect safety. For ointments, a fluid drachm to each pound is quite sufficient to preserve them, while it has no injurious action whatever, and is quite compatible with the great majority of ointments and oily preparations—a remark which does not apply to the alkaline sulphites and bi-sulphites which have, from time to time, been brought forward for similar purposes."—*Med. and Sur. Rep., Nov.* 16, 1867, *from Brit. Med. Journal.*

Mercurial Ointment as an Anthelmintic.—Dr. T. E. Broaddus, of St. Charles, La., (*New Orleans Med. and Surg. Jour.*) in 1861, prescribed 15 grains of blue mass for a robust patient, to be followed by castor oil. On his next visit he was surprised to find the medicine had produced an extraordinary evacuation of worms (lumbricoides). On querying as to the medicine taken, the patient said he had great difficulty in taking the mass and had to swallow it in lumps. On examination the doctor found that his patient had taken mercurial ointment, which readily accounted for the practical difficulty of making it into pills.

Subsequently, Dr. B., in unusual cases requiring a vermifuge, prescribed this mercurial in the form of an emulsion for lumbricoides and for tænia, followed by castor oil, with complete success.

Antidote for external Poisoning by Cyanide of Potassium.—The extensive use made of this virulent poison in electroplating and other arts, sometimes is the cause of painful and troublesome ulcers on the hands of the workmen. The Boston Journal of Chemistry contains a statement from the foreman of the gilding department of the American Watch Works, in which he says that experience has taught him that the most effectual remedy which can be employed in such cases is the proto-sulphate of iron in fine powder, rubbed up with raw linseed oil.

The Proposed International Coinage.—A specimen medal of the proposed international coin of twenty-five francs, recently struck by the government of France, was presented this morning to the President, through Mr. Samuel B. Ruggles, delegate of the United States to the International Monetary Conference, and who has just returned from Paris.

The new coin is 24 millimetres in diameter, or very slightly larger than the present half eagle of the United States or the sovereign of Great Britain. It bears on its obverse the conjoint inscription, "Five dollars—twenty-five francs," and is a type of the proposed monentary union of the three nations. If adopted by the governments of the United States and Great Britain, this international coinage, bearing the denominations and emblems of the respective nations, will circulate with perfect equality and without impediment throughout the world. The official report of Mr. Ruggles, fully embodying the facts needed for the careful consideration of the subject, will probably be sent to Congress during the present week.—*Phila. North American, Nov.* 27, 1867.

Atropine harmless to Rabbits.—Dr. Ogle, Lecturer on Physiology at St. George's Hospital, sums up a valuable paper, in which is included a large number of experiments, viz.:

1. That a rabbit of middle age can live for, at any rate, six days exclusively on belladonna without inconvenience.
2. That a rabbit can tolerate enormous doses of atropine administered either by the stomach or by subcutaneous injection, and that this tolerance is not due to non-absorption of the poison.
3. That this tolerance increases with the age of the rabbit.
4. That dilatation of the pupils is, however, produced just as readily, if not more so, in an old rabbit as it is in a young one.—*New York Med. Journal, Nov.*, 1867.

The Packing of Bottles, filled or empty, is now performed more safely, closely, and rapidly, than heretofore, by means of India-rubber rings slipped over them. The rings cost only once, and can remain on the bottle as long as it lasts.—*Bost. Jour. Chemistry, Dec.* 1867.

The new process of Preserving Human Flesh.—Not long ago I spoke of the lost secret for petrifying human flesh, of the persevering attempts made in Italy to rediscover it, and of the discovery, while making these researches, of another method of preserving flesh, perhaps quite as valuable as the last one. At the Great Exposition, Dr. Burnetti, of Padua, the finder of the new method, was honored with a gold medal, and with the true spirit of a man of science, he came forward the other evening at one of the meetings of the International Medical Congress, now in session at the School of Medicine of Paris, and divulged his secret. The great amphitheatre of the school was crowded with distinguished medical men from all parts of the world, and when the Italian *savant* had concluded his speech, he was rewarded with an ovation which must have been a full compensation for any losses he may suffer from having his secret pass into the public domain. The following details are sufficient to enable any anatomist to avail himself of this important discovery.

The process of Dr. Burnetti, which he explained, comprises several operations, viz.: 1—the washing of the piece to be preserved; 2—the *degraissage*, or eating away of the fatty matter; 3—the tanning; 4—the desiccation.

1. To wash the piece, M. Burnetti passes a current of pure water through the blood-vessels and various excretory canals, and then he washes the water out by a current of alcohol.

2. For destroying the fat, he follows the alcohol with ether, which he pushes, of course, through the same blood-vessel and excretory ducts; this part of the operation lasts some hours. The ether penetrates the interstices of the flesh, and dissolves all the fat. The piece at this point of the process, may be preserved any length of time desired, plunged in ether, before proceeding to the final operation.

3. For the tanning process, M. Burnetti dissolves tannin in boiling distilled water, and then, after washing the ether out of the vessel with distilled water, he throws this solution in.

4. For the drying process, Dr. Burnetti places the pieces in a vase with a double bottom, filled with boiling water, and he fills the place of the preceding liquids with warm, dry air. By the aid of a reservoir, in which air is compressed to about two atmospheres, and which communicates by a stop-cock and a system of tubes, first to a vase containing chloride of calcium, then with another heated, then with the vessels and excretory ducts of the anatomical piece in course of preparation, he establishes a gaseous current which expels in a very little time all the fluids. The operation is now finished.

The piece remains supple, light, preserves its size, its normal relations, its solid histological elements, for there are no longer any fluids in it. It may be handled without fear, and will last indefinitely. The discovery is a magnificent one, and the sooner medical schools are provided with full cabinets of natural and pathological pieces, the better.—*St. Louis Med. Rep., Nov.* 1, 1867, *from N. Y. Times.*

Colorless Varnish with Copal.—To prepare this varnish the copal must be picked; each piece is broken and a drop of rosemary oil poured on it. Those pieces which, on contact with the oil, become soft, are the ones used. The pieces being selected, they are ground and passed through a sieve, being reduced to a fine powder. It is then placed in a glass, and a corresponding volume of rosemary oil poured over it; the mixture is then stirred for a few minutes until it is transformed into a thick liquor. It is then left to rest for two hours, when a few drops of rectified alcohol is added and intimately mixed. Repeat the operation until the varnish is of a sufficient consistency; leave to rest for a few days, and decant the clear. This varnish can be applied to wood and metals.—*Jour. Applied. Chem.*

Minutes of the Philadelphia College of Pharmacy.

A special meeting of the Philadelphia College of Pharmacy was held at the College Hall on the evening of the 10th of December, pursuant to a request from the Board of Trustees, and the issuing of the accustomed notice.

The President of the College, Charles Ellis, in the chair; twenty members present. The object of the meeting was announced by the Chair to be the consideration of the subject of a new location for the College building.

The resolutions referred to a Committee by the College at its last semi-annual meeting in September were read, accepted, and the Committee discharged.

The following report from a Committee appointed by the Board of Trustees was read:

"The Committee of the Board of Trustees, appointed to view the lot of ground, &c., in the vicinity of Tenth and Cherry streets, the property of Samuel Bettle, offered for sale to the College as per diagram drawn by Charles Richardson, real estate broker, being directed to report to a special meeting of the College, to be held the 10th inst., respectfully report—

"That they have examined the premises, and recommend the purchase by the College of the dwelling house No. 145 North Tenth St.. together with the burial-ground lot, excepting so much of the latter as is included between its northern boundary and a line drawn at right angles to Tenth street across the lot, 17 feet 6 inches south of the said northern boundary.

"They have prepared the following resolutions for the action of the College, and recommend their adoption:

"*Resolved*, 1st. That the Philadelphia College of Pharmacy agrees to purchase from Samuel Bettle the three-story brick dwelling house and lot No. 145 North Tenth street, with a portion of the vacant lot lying back of Tenth and Cherry streets; the whole premises agreed to be purchased being described as follows: Commencing at Tenth street, at the N. W. corner of the lot No. 145 North Tenth street, extending eastwardly on a line at right angles to said street 132 feet, to a point; thence south, on a line parallel to Tenth street, 72 feet 6 inches; thence west, on a line parallel to Cherry street, 43 feet, and including a certain alley way leading to Cherry street, 6 feet 7½ inches in width; thence north, at right angles, 5 feet to a point; thence west, on a line parallel to Cherry street, 43 feet; thence north, on a line parallel to Tenth street, 50 feet, thence west, at right angles, 46 feet to Tenth street; thence north, along said street, 17 feet 6 inches, to the place of beginning;—on ground rent, at an annual rent charge of six hundred and thirty-nine dollars ($639), to issue out of and be secured on the said premises in the usual manner, and further secured by a policy of insurance on the buildings to be erected thereon by this College.

"*Resolved*, 2*d*. That the President, Secretary and Treasurer are hereby authorized, directed, and empowered, on behalf of the College, to make the necessary agreements with the parties concerned, and to sign and execute the necessary papers, in order to carry into effect the preceding resolution, and to use the corporate seal of the College therefor.

"And it is further *Resolved*, 3*d*. That the Secretary be directed to certify under his signature, to the parties concerned, that, at a special meeting of the Philadelphia College of Pharmacy, duly called, and held, after due notice, Dec. 10th, 1867, for the purpose of acting upon a proposition to buy a new location for the College building, there being present a full quorum of members, the preceding resolutions were duly moved, seconded and adopted; and to furnish a copy thereof to Samuel Bettle, in lieu of an agreement, until the title can be transferred.

AMBROSE SMITH,
EDWARD PARRISH,
JAMES T. SHINN,
Philada., 12*th mo.* 10, 1867. *Committee.*"

The resolutions were read by sections, considered, and adopted.

On motion, Ambrose Smith, Edward Parrish and James T. Shinn were appointed to effect the purchase of the property, under the resolutions.

The report from the Committee appointed by the College at its semi-annual meeting was again taken up, and read, as follows:

"*Whereas*, The Board of Trustees of this College have had under consideration the subject of increased accommodations for the School of Pharmacy, and at the annual meeting of the College, held in March last, a Committee was appointed to co-operate with the Board of Trustees, with the view of effecting such increased accommodations; and

"*Whereas*, The said joint Committee did not feel themselves authorized to purchase a new site for the College, without special instructions to that effect from the College,—this College, taking into consideration the importance, now amounting to almost a necessity for such action, do

"*Resolve*, 1*st*. That a Committee be appointed by the College to consider the ways and means whereby a new building for the accommodation of the College can be had.

"2*d*. That the Committee be empowered to solicit donations to a fund, to be called the 'building fund.'

"3*d*. That the Committee be also empowered to ascertain what amount can be obtained on a loan, secured by the issue of scrip by this College, for a period of ten years; said scrip to have coupons attached for the interest, payable semi-annually.

"4*th*. The Committee are hereby authorized and empowered by this College to proceed in the erection of a building for the accommodation of the College, whenever funds arising from the sale of the present College lot and building, and issue of scrip for an amount not exceeding five thousand dollars, will enable them to effect such purpose.

"5*th.* That the Committee hereby appointed be empowered to sell the present College premises, at public or private sale; and the proper officers of the College are hereby directed to make a good and proper title to, and conveyance of said premises to the purchaser, under the corporate seal of the College.

"6*th.* The proper officers of the College are hereby empowered and directed to issue scrip, if in their judgment necessary, for an amount not exceeding five thousand dollars, pledging the property of the College for the payment of the principal of said loan at maturity, and the interest semi-annually.

"7*th.* The sale and delivery of the present College premises shall not be effected until proper accommodations for the College be secured, so as not to interfere with the usual course of instruction of the School of Pharmacy.

"8*th.* That the present College and building shall not be sold for a less sum than * * * dollars."

The resolutions were then read, considered, and adopted.

On motion, the Chair was directed to appoint a Committee to carry into effect the resolutions; said Committee to appoint its own Chairman, five of its members to constitute a quorum, and to keep a record of its proceedings, and report the same to the College.

To this service the Chair appointed

Prof. Robt. Bridges, M.D.,	T. Morris Perot,	John C. Allen,
Chas. Bullock,	Wm. J. Jenks,	Wm. C. Bakes,
Wm. Procter, Jr.,	A. B. Taylor,	Ambrose Smith,
Prof. Edward Parrish,	Chas. Shivers,	Thos. S. Wiegand,
James T. Shinn,	Dillwyn Parrish,	Prof. John M. Maisch.

On motion, the President, Charles Ellis, was added to the Committee.

On motion, then adjourned.

CHARLES BULLOCK, *Secretary.*

Editorial Department.

MASSACHUSETTS COLLEGE OF PHARMACY.—It was with great pleasure that we received the announcement that "the Massachusetts College of Pharmacy proposed to inaugurate a course of lectures on chemistry, materia medica, botany and pharmacy, and to offer the apothecaries of New England an opportunity, so long desired, to improve and perfect themselves in their profession." The following letter from Prof. Markoe enables us to say that our Boston friends have made a most excellent beginning, and will we doubt not continue to do well. They have our cordial sympathy and encouragement to persevere.

Boston, Dec. 14th, 1867.

Dear Sir,—I have the pleasure to inform you that we have been successful in forming a School of Pharmacy, under the authority of the Massachusetts College of Pharmacy. Some three or four months ago the Trustees appointed a "Lecture Committee," with full power to organize a School of Pharmacy.

The Committee consisted of Thomas Hollis, H. W. Lincoln, and the writer; and. after a very considerable amount of labor, we reported that we were sure of starting with a class of twenty five. The Trustees approved the work of the Committee, and appointed the following named gentlemen lecturers:

C. M. Tracy. Lecturer on Materia Medica and Botany;

E. L. Stoddard (instructer in the laboratory of the Massachusetts Institute of Technology), Lecturer on Chemistry;

G. F. H. Markoe, Lecturer on the Theory and Practice of Pharmacy.

The opening lecture was delivered by S. M. Colcord, on Wednesday evening, Dec. 11th, before a full house, in which nearly every pharmaceutical establishment in this city and vicinity was represented; ladies were also present. Mr. Colcord's address was able, eloquent, and especially practical; it occupied one hour in its delivery. Thos. Hollis, President of the College, presided, and made a brief address before introducing the lecturer. On Friday evening, Dec. 13th, the regular lectures for instruction began, E. H. Clarke, M. D., Professor of Materia Medica in Harvard University, opening the Materia Medica course with a very instructive and interesting lecture, in which he clearly defined the duties of the pharmaceutist, as to the kind and extent of his studies. I followed Prof. Clarke, with the introductory lecture of the Pharmacy course. We have succeeded far better than we anticipated, and have a class that already numbers thirty-six students, which will do very well for a beginning.

Very truly yours, Geo. F. H. Markoe.

Maine Pharmaceutical Association.—In July last, this new member of the Pharmaceutical Associations of the United States, entered into existence at a meeting called by Dr. Cummings, of Portland, for the 23d of that month. The officers elected were, for *President*, Henry T. Cummings, M. D., of Portland; for *Vice President*, John G. Cook, of Lewistown; for *Recording Secretary*, Charles K. Partridge, of Augusta; for *Corresponding Secretary*, Aug. G. Schlotterbeck; *Treasurer*, M. S. Whittier; *Executive Committee*, H. T. Cummings, H. H. Hay and J. H. J. Thayer, all of Portland.

This is a good beginning. The territory of Maine is nearly as large as that of all the other New England States, and it is too far from Boston to enable Pharmaceutists to affiliate thoroughly with the Massachusetts College. The more local associations the better; all cannot have nor need not have Schools of Pharmacy, but association yields direct fruits to the members, encourages literature by forming libraries, gives protection by united action and, above all, cultivates fraternal intercourse among business men by which the asperities of competition are softened.

ST. LOUIS COLLEGE OF PHARMACY.—The following letter states the result of the annual election of this body.

St. Louis, Nov. 5, 1867.

Editor Journal of Pharmacy.

SIR :—At the regular annual meeting of the St. Louis College of Pharmacy, held Oct. 14th, 1867, the following persons were elected officers for the ensuing year :—

President—F. Sennewald.
1*st Vice President*—Theodore Kalb.
2*d Vice President*—Maurice W. Alexander.
Recording Secretary—Edmund T. Walsh.
Corresponding Secretary—Hubert Primm.
Treasurer—Charles L. Lips, M. D.

Respectfully,
HUBERT PRIMM,
Corresponding Secretary.

THE PHILADELPHIA COLLEGE OF PHARMACY.—Our readers, by reference to page 85, will observe that measures are being taken to erect a new and more commodious hall for the accommodation of our College and its growing School of Pharmacy. When, after years of occupation of rented premises, through the efforts of a few earnest workers in the College, headed by the late Henry Troth, the present Hall was reared in 1832, few expected to see the day when the Institution would outgrow its capacity ; but so it is now. Not only are the two lecture rooms too small to seat the class comfortably, but the meeting room has ceased to afford space for the growing museum and library. Under these circumstances, the idea of a new hall has for several years forced itself on the Board of Trustees, until during the present winter it has resulted in the purchase of a lot of ample dimensions for the purpose in view, in a central location. It is intended to proceed, as soon as the season opens, to erect the Hall. Meanwhile, the Committee to whom the subject has been committed will proceed, according to the resolutions above referred to, to raise the funds by the sale of the present premises, by the creation of a limited loan and the issue of scrip, and by donations from the members and such others as may feel interested in the progress of the Institution.

The appeal, it is to be hoped, will be kindly met and earnestly answered. Every alumnus of the College, no matter where located, who, having succeeded in business, feels a warm side towards his *alma mater*, has an opportunity now to infuse new life in her veins by a timely contribution to the building fund, and aid those of us who, being on the spot, will have to both work and contribute. No more disinterested and purely scientific corporation exists among us, whose aims are solely to benefit the community by enlightening and educating the coming generation of pharmaceutists, without, so far, the smallest return to the members in any other shape but that of satisfaction for well-doing, and the assurance of giving the community better service in the responsible business of dispensing medicines. Should the views now entertained of the project be carried out, it is believed that ample accommodation will be furnished for a library and reading room, where members may resort weekly or daily, a hall for general meetings of ample size, a museum, two large lecture rooms, and, over all, a commodious, well lighted and ventilated room for a practical school of chemistry and pharmacy, where analytical and industrial chemistry may be thoroughly taught,—affording the first instance in this country of this form of tuition, so well illustrated in London, and at Zurich and other continental establishments. To the pharmaceutist this will give a finishing touch to his home opportunities, or, where such are few, will substitute them; but to the student with wholesale druggists and chemists it will open out a self-aiding power that will be of the first importance to his business success in the fabrication of products.

Proceedings of the American Pharmaceutical Association at its Fifteenth Annual Meeting, held in New York Sept. 11*th*, 1867*; also the Constitution and Roll of Members.* Philadelphia, 1867; pp. 453, octavo.

We congratulate the Executive Committee, and especially the Permanent Secretary, for their success in getting out the volume within the year, and especially with its improved appearance and greater size. For the quality of the essays the reader is referred to many samples in this number, which speak well for the efforts of the members. But the strength of the work will be seen in the more detailed phonographic report of the discussions, and the ample report on the Progress of Pharmacy. We trust the Committee will be favored to effect the distribution of the volume as speedily as possible.

Congres Général des Pharmaciens de France et de l'Etranger tenu les 4, 5, *et* 6 *Juillet*, 1867, *au Conservatoire des Arts et Métiers, a Paris.* Compt. Rendus, Paris chez Asselin, Librarie-editeur, Place Ecole de médecin, 1867, pp. 233, octavo.

Our readers are, perhaps, not generally aware that, beside the two Pharmaceutical Conventions held in Paris in August, noticed in our last, a much larger gathering convened in the same city on the fourth of July previously, at the Conservatoire des Arts et Métiers, of which the above volume is the published proceedings. The Assembly was duly authorized by the Minister of the Interior, and permission obtained to meet in the noted Museum at the Conservatoire. 656 pharmaciens were present, of whom 317 were from Paris, 327 from the departments of France, and

12 foreigners, who represented the United States, Spain, Turkey, England, Prussia, Switzerland and Belgium. The officers of the "Société de Prévoyance" of the pharmaciens, of the department of the Seine, of which M. Amédée Vée is President, formed the temporary organization. After much discussion and two ballots M. Fumouze was declared President; next, six Vice-Presidents and six Secretaries were elected; and, at the suggestion of M. Vée, afterwards, nine "Assessors" were elected from among the foreign members, including Dr. Jenkins, of Louisville, (who was in attendance), as representing the United States.

The subsequent sessions were occupied in discussing the reports on the questions of the day, which had been prepared beforehand. The first was, "Is the legislation which regulates the exercise of Pharmacy in France in harmony with the customs, the economical institutions of the country, and the exigencies of the Profession?" The resolution of the reporters in reply was that "The General Congress of French and Foreign Pharmaciens think that the laws and ordinances which govern Pharmacy in France ought to be revised in the sense of absolute liberty, without any restrictions, under the guarantee of the diploma and the civil responsibility of the pharmacien."

We have not space now to expose the views which obtained in this large and democratic body of pharmaciens, but will merely state that in the main they represent the liberal views of the "Société de Prévoyance" of Paris, as regards the freedom of Pharmacy from undue legal restraint and interference, believing that education, represented by the diploma and the common law, is sufficient to regulate Pharmacy, and guarantee the protection of the public. In this they are diametrically opposed to the Society of Pharmacy, and the other two Congresses, whose action aims to make Pharmacy as much a profession as medicine, to abolish all specialties, to prevent all advertisements of medicines, and some of the members go so far as to advocate no public display—keeping shop in a back room or in the second story, with the simple sign on the door of "A B, Pharmacien." All this does very well for old-established houses, but parallel with it must go gray-haired clerks, too poor to marry and hopeless of advancement, the business conducted by proxies, and, without the stimulus of competition, relapsing into a vegetative, red-tape, almost fossilized condition.

Proceedings of the British Pharmaceutical Conference. Dundee Meeting, 1867; pp. 48, octavo.

We are in receipt of this volume by mail, from the Secretary, Dr. Attfield. The English custom of publishing the proceedings in advance of the official volume enabled us to print a selection from the articles in November and several others in this number; and our friend Ebert's letter enlightened our readers in regard to the transactions at Dundee. The amount of matter produced is less this year than last, a result probably due to the fewer members in attendance at so uncentral a point as Dundee. Our own experience is very much the same in regard to the size of the annual volumes. No one can doubt that the Conference is exerting an ameliorating influence on British pharmaceutists and pharmacy, and it is believed that this influence will go on increasing. One thing about the arrangements has appeared to us worthy of change, and that is making the place of meeting subject to the decision of the British Association of Science. Now, it is difficult to serve two masters; we are all acquainted with the reasons. If the more scientific members of the Conference are thus drawn towards it nominally, whilst they are really attracted by the larger body, it may serve a purpose, but may not do as much good as to locate the meetings strictly in view of their influence in advancing purely pharmaceutical interests. The sooner all the able men, as well as the men of respectable pharmaceutical ability in Great Britain, among the chemists and druggists, can be brought into the ranks with the pharmaceutical chemists the better, and this way of meeting on a common ground is certainly the best means of effecting the desired fusion.

Calender of the Pharmaceutical Society of Great Britain, (founded 1841, incorporated finally 1852). London, printed for the Society. 1866; pp. 77, oct.

It has been usual with the Society to print, with the July number of the Pharmaceutical Journal, a list of the members. In lieu of this, the Council have decided to gather together, in pamphlet form, a list of the official documents, by-laws, etc., that are scattered through the Journal, and to refer to which many volumes have to be consulted. Besides these, a large amount of information relating to the School of Pharmacy, the examinations, the benevolent fund, the library, laboratory, etc., which to the members will be of very great utility. Among other matters is a chapter entitled "Hints to Students preparing to pass the examination of the Pharmaceutical Society." In an appendix is a compend of all the acts of Parliament bearing on and important to druggists and pharmaceutists, especially those relating to revenue laws and poisons which will be a great help. Something of this kind might be issued by our College with great propriety, and by including the revenue and other enactments, with the special matters of the College, would be doing the members good service.

A Catalogue of the Officers and Students of the Harvard University for the Academical Year 1867-68; *first term.* Cambridge: Sever & Francis, 1867; pp. 103, 18mo.

This is more than a catalogue, embracing much information in reference to the several faculties and branches of this extensive institution, useful to those desiring to enter or wishing to understand the working of the several departments. The united libraries amount to 176,000 volumes, and the students, of all grades, 1020. These are distributed in the regular Collegiate School, the Divinity School, the Law School, the Lawrence Scientific School, and the Medical School.

Address of George Bentham, Esq., F R S., President; together with the Obituary Notices of Deceased Members; by George Busk, Esq., Secretary; read at the Anniversary Meeting of the Linnean Society, on Friday, May 14, 1867. Printed at the request of the Fellows. London, 1867; pp. 32, octavo.

For this interesting address of Mr. Bentham we are indebted to our friend Daniel Hanbury, F.L.S., &c., London. After a few words on the affairs of the Linnean Society, the address goes into a very lucid and impartial account of the strictly scientific publications of the United States from Colonial times to the present, commencing with the transactions of the American Philosophical Society, and ending with the Smithsonian Institution and its publications, the operations of which are dwelt upon at some length approvingly, especially the system of international exchanges.

An Introduction to Pharmaceutical Chemistry. By John Attfield, Ph. D., F.C.S., Professor of Practical Chemistry to the Pharmaceutical Society of Great Britain. London: John Van Voorst, 1867; pp. 447, 12mo.

The receipt of this volume from the author, by mail, is hereby acknowledged. Though too late for notice in this number, we hope to have a notice of it in our March issue. The work has been carefully prepared by Dr. Attfield for chemical and pharmaceutical students.

Proceedings of the British Pharmaceutical Conference. Nottingham Meeting, 1866; pp. 111, octavo.

Exhibition of Objects relating to Pharmacy, held at Nottingham, August 1866, *during the meeting of the Pharmaceutical Conference;* pp. 24 octavo.

These pamphlets, forwarded to us by the Secretary of the Conference last year, did not reach us until a few weeks ago, owing to some mismanagement in the medium adopted. As, however, they mainly appeared in the Pharmaceutical Journal, many of the papers were copied and the meeting referred to in due course in our pages.

The Physician's Hand-Book for 1868. By William Elmer, M. D. New York: W. A. Townsend & Adams, publishers, 1868.

This Annual now makes its eleventh appearance, and has been almost re-written. The preface claims it as a new work. It contains 113 pages of letter press, and is addressed both to regular physicians and eclectics, if we may judge by the list of medicines. It is a companion to the practitioner and a great aid to the physician in his daily rounds in emergencies, as well as affording a regular daily record.

East India (*Chinchona Plant*). Return to an address of the Honorable the House of Commons, dated 14th May, 1866, for "Copy of further Correspondence relating to the Introduction of the Chinchona Plant into *India*, and to Proceedings connected with its Cultivation from April, 1863, to April, 1866." India Office, June, 1866. Printed by order of the House of Commons, June 18, 1866. Folio, pp. 377.

We are indebted to Mr. Daniel Hanbury, F. R. S., of London, for this valuable exposé of the progress of the cinchona culture in India, illustrated by maps and wood engravings, and hope to make some extracts from it for the benefit of our readers.

OBITUARY.

George Getz Shumard, M.D.—Dr. Geo. G. Shumard was born at Burlington, N. J., in 1825, but while still a child removed to Cincinnati, where his boyhood and early manhood were spent. Having completed his academic course at Woodward College, he commenced the study of medicine, attended one course of lectures at the Medical College of Ohio, and graduated at the University of Louisville in 1847. He first located at Albion, Ill., and later at Fort Smith, Ark., where he had his home until the breaking out of the war. A scientific and practical geologist, he made a number of private explorations, and accompanied the Red River Exploring Expedition, commanded by Captain, now Brigadier General, R. B. Marcy, U S.A., and the "Artesian Well Expedition," commanded by Captain, now Major General, John Pope, U.S.A. Still later, Dr. Shumard was State Geologist of Texas. His various scientific reports, made from time to time, are well known, and the profession will remember his discovery of an American substitute for gum arabic—*mesquite* gum.—*Cincinnati Lancet*, Nov., 1867.

Catalogue of the Class of the Philadelphia College of Pharmacy,

FOR THE FORTY-SEVENTH SESSION, 1867–68.

With a List of their Preceptors and Localities.

MATRICULANTS.	TOWN OR COUNTY.	STATE.	PRECEPTOR.
Ball, Ellwood,	Philadelphia,	Pennsylvania,	H. Gerhard.
Barton, G. W.	"	"	J. R. Angney; M.D.
Bates, Louis A.	Montgomery,	Alabama,	J. T. Hufnal.
Beck. John W.	Lancaster,	Ohio,	G. G. Beck.
Bell, James S.	Albion,	Canada West,	E. Parrish.
Black, James D.	Philadelphia,	Pennsylvania,	A. B. Taylor.
Blake, Amos R.	"	"	Thomas Blake, M.D.
Bodine, James P.	Bordentown,	New Jersey,	A. Warren.

Boudinot, Elliot E.	Terre Haute,	Indiana,	James Gallagher.
Bowman, Henry K.	Philadelphia,	Pennsylvania,	B. F. Johnson.
Boyd, Abraham,	Licking Co.,	Ohio,	C. R. Keeney.
Boyle, John,	Philadelphia,	Pennsylvania,	C. Ellis, Son & Co.
Bradley, Thomas F.	"	"	Hazard & Smith.
Bronson, Eugene C.	Chicago,	Illinois,	Bennett L. Smedley.
Clark, A. B., Jr.	Galesburg,	"	J. P. Bolton.
Clothier, Samuel,	Philadelphia,	Pennsylvania,	Mellor & Rittenhouse.
Compton, Briscoe,	Fairmount,	West Virginia,	Hassard & Co.
Conner, Wm.		Pennsylvania,	W. W. Mullen.
Corbidge, J. E.	Chicago,	Illinois,	E. H. Sargeant.
Craven, James,	Philadelphia,	Pennsylvania,	Bullock & Crenshaw.
Crawford, Wm.	"	"	Crawford & Fobes.
Cullen, Gustavus,	Camden,	New Jersey,	T. F. Cullen, M.D.
Cummings, Joseph J.		Pennsylvania,	John Gegan, M.D.
Davis, Aaron R.	Allentown,	"	A. Hansell & Bro.
Day, Robert L.	Somerville,	"	Thomas R. Coombe.
Dehuff, John G.	Lebanon,	"	Charles Shivers.
Detwiller, H. J.	Friedensville.	"	John Reakirt & Co.
Dilks, Samuel L.	Philadelphia,	"	S. L. Dilks.
Dinning, H. H.	Buffalo,	New York,	Charles Shivers.
Dougherty, Wm.		Michigan,	G. W. Dougherty.
Eayre, Mortimer H.	Eayrestown,	New Jersey,	W. F. Simes & Son.
Ehler, Wm. R.	Lancaster,	Pennsylvania,	Wm. R. Ehler.
Elliott, Frederick G.	Philadelphia,	"	Wetherill & Bro.
England, Howard,	Wilmington,	Delaware,	L. M. England & Son.
Esterle, August,	Philadelphia,	Pennsylvania,	Gilbert & Royal.
Estlack, Horace W.	"	"	Amos H. Yarnall.
Eyster, C. E.	Chambersburg,	"	D. Milligan.
Farr, Wm. L.	Oxford,	Ohio,	Daniel S. Jones.
Foulke, James,	Quakertown,	Pennsylvania,	A. Tatem.
French, Howard B.	Philadelphia,	"	Wm. B. Webb.
French, John B.		Maryland,	Hassard & Co.
Fritchey, James G.	Lancaster,	Pennsylvania,	E. B. Garrigues.
Fronheiser, J. J.	Johnstown,	"	E. Herwig.
Gerhard, A. F.	Philadelphia,	"	E. Gaillard.
Gernon, Wm. D.	"	"	Wetherill & Bro.
Good, James M	"	"	B. N. Bethel & Co.
Grebe, Wm. H.		Delaware,	Wm. M. Reilly.
Hannaman, J.	Philadelphia,	Pennsylvania,	R. Keys. M.D.
Hand, Charles,	Burlington,	New Jersey,	Wm. R. Warner & Co.
Harper, Warren,	Dover,	Delaware,	H. C. Blair & Sons.
Harrop, Joseph,	Galliopolis,	Ohio,	E. Parrish.
Hecker, Jacob K.	Lebanon,	Pennsylvania,	Wm. B. Webb.
Herbert, Eugene,	Philadelphia,	"	French, Richards & Co.
Hoagland, P. R.	Chicago,	Illinois,	B. N. Bethel & Co.
Holstein, Charles E.		Pennsylvania,	Lancaster & Wills.
Hunter, Thomas,	Philadelphia,	"	R. Keys. M.D.
Husband, Thomas J., Jr.	"	"	Thos. J. Husband.
Hutchison, Hamilton,	"	"	J. T. Shinn.
Ingalls, A. O.	Waukegan,	Illinois,	W. S. Pearce.
Ingraham, F.		New York,	H. Walsh.
Isard, George W.	Philadelphia,	Pennsylvania,	W. Gibson, M.D.
Jones, D. Augustus,	Mount Holly,	New Jersey,	W. Notson, M.D.
Jorden, Henry A.		"	Wm. H. Hickman.
Kærcross, Edward,	Philadelphia,	Pennsylvania,	Alfred Joes.
Karch, Joseph J.	Lebanon,	"	C. W. Hancock.
Kay, Samuel D.	Haddonfield,	New Jersey,	T. N. Penrose.
Kelty, Clement,	Salem,	"	A. W. Wright, M.D.
Kerr, James,	Pittsburg,	Pennsylvania,	J. C. Mattern.
Kirkbride, Joseph J.	Philadelphia,	"	J. J. Kirkbride.
Kline, M. N.	"	"	Smith & Shoemaker.
Klump, Charles C.	Allentown,	"	Gustavus Radefield.
Kolp, C. Henry,	Philadelphia,	"	
Kraft, Norman A.	"	"	C. Ellis, Son & Co.
Krewson, Wm. E.	Abington,	"	Thos. Gordon, M.D.
Lamparter, Eugene,	Neutlingen,	Germany,	F. Pleibel, M.D.
Levering, George W.	Philadelphia,	Pennsylvania,	Charles E. Davis.
Lillard, Benjamin,	Nashville,	Tennessee.	Powers & Weightman.
Livezey J. Dilworth,	Philadelphia,	Pennsylvania,	A. Livezey, M.D.
Louchlin, Dennis J.	"	"	D. Jameson, Jr.
Lunney, George,	"	"	J. M. Thomas.

MacBride, Wm. V.	Philadelphia,	Pennsylvania,	G. W. Vaughan.
Marshall, Alfred S.		New Jersey,	Lancaster Thomas.
Marshall, R. T.	“	Pennsylvania,	W. F. Simes & Son.
Mattern, Wm. K.	“	“	S. Rosenberger, M.D.
Matthews, Charles C.	Shippensburg,	“	George Ross.
Moore, Orlando L.		Wisconsin,	Hassard & Co.
Neergaard, Wm.	New York,	New York,	J. M. Maisch.
Newbourg, C. F.		Long Island,	C. F. Newbourg.
Nock, Wm. B.	Camden,	Delaware,	S. C. Allaband, M.D.
O'Brien, F. Bryan,	Philadelphia,	Pennsylvania,	F. B. O'Brien.
Ottinger, Franklin,	Mount Holly,	New Jersey,	James N. Marks.
Ottinger, J. J.	“	“	O. S. Hubbell.
Parrish, Clemmons,	Philadelphia,	Pennsylvania,	E. Parrish.
Peck, Aulay,	“	“	Peck & Co.
Penrose, Stephen F.	Quakertown,	“	S. Birdsell, M.D.
Pfromm, Adam,	Philadelphia,	“	A. Wiltberger.
Phelps, Frederick H.	Jackson,	California,	James Kenworthy.
Plank, Winifield S.	Churchtown,	Pennsylvania,	T. H. Smart.
Price, Ferris,	Philadelphia,	“	C. Ellis, Son & Co.
Rambo, Milton,	Chester,	“	M. H. Bickley.
Raser, Wm. H.	Reading,	“	J. W. Dallam & Co.
Read, Charles B.	Mount Holly,	New Jersey,	Wyeth & Bro.
Reifsynder, Evans F.	Philadelphia,	Pennsylvania,	Beates & Miller.
Reynolds, John J.	Chambersburg,	“	J. T. Shinn.
Richards, U. F.	Camden.	New Jersey,	French, Richards & Co.
Ridgway, Wm. T.	Mount Holly,	“	Wyeth & Bro.
Roberts, Charles E.	Philadelphia,	Pennsylvania,	Hance, Griffith & Co.
Robertson, Henry,	“	“	F. Brown.
Robinson, James S.	“	“	A. B. Taylor.
Schall, Alexander,	Norristown,	“	Gilbert & Royal.
Schellinger, C. M.	Cape Island,	New Jersey,	A. M. McCrea.
Seybert, Robert L.	Philadelphia,	Pennsylvania,	C. Janvier.
Sharp, Robert C.	Penningtonville,	“	H. C. Blair & Sons.
Shaw, Joseph B.	Cape Island,	New Jersey,	W. F. Simes & Son.
Shoffner, John N.	Norristown,	Pennsylvania,	Wm. Stahler.
Shropshire, Joseph B.	Mauricetown,	New Jersey,	A. C. Merritt.
Shryock, Allen K.,	Philadelphia,	Pennsylvania,	Wm. B. Thompson.
Shugard, B. F.	Montgomery Co.	Pennsylvania,	Jas. G. Wells.
Sill, Jesse,	McKeesport,	“	J. Sill.
Simes, Samuel F.	Philadelphia,	“	H. B. Lippincott.
Simon, Mathias,	La Crosse,	Wisconsin,	W. T. Wenzell.
Smith, Homer A.	Chicago,	Illinois,	R. C. Brodie.
Stackhouse, George P.	Philadelphia,	Pennsylvania,	F. Zerman.
Stein, Jacob.	Annville,	“	John Bley.
Sterling, E. B.	Watertown,	New York,	
Stern, Aaron.	Philadelphia,	Pennsylvania,	Smith & Shoemaker.
Stiefel, Louis,	“	“	Aschenback & Miller.
Stillwell, Walter C.	“	“	James L. Bispham.
Stolte, M. J.,	“	“	
Storks, L. Scott,	“	“	George C. Evans.
Supplee, J. L.	“	“	J. B. Moore.
Sweeney, R. E.	“	“	R. E. Sweeny.
Taylor, Harry B.	“	“	W. T. Taylor, M.D.
Taylor, W. G.		New Jersey,	R. T. Taylor, M.D.
Thomas, Frank W.	Dayton,	Ohio,	P. G. Oliver.
Thomas, John S.	Norristown,	Pennsylvania,	C. Ellis, Son & Co.
Tull, John.	Philadelphia,	“	C. Ellis, Son & Co.
Turner, Dudley H.	Towanda,	“	H. C. Porter, M.D.
Wallen, Jarvis R.		New Jersey,	George H. Davis.
Ware, Samuel,	Bridgeton,	“	Charles Cumming.
Webb, Wm. H.	Philadelphia,	Pennsylvania,	U. S. Laboratory.
Westerman, J. F.	“	“	G. C. Stees, M.D.
Williamson, Forrest F.	Delaware Co.,	“	A. H. Yarnall.
Williamson, L.	Philadelphia,	“	C. R. Keeney.
Wilson, Charles,	York,	“	Curran & Wilson.
Wilson, Edwin K.	Haddonfield,	New Jersey,	T. R. Coombe.
Wilson, Joseph T.	Schuylk'l Haven,	Pennsylvania,	C. E. Cady, M.D.
Wilson, Wm.	Parkesburg,	“	James H. Smith, M.D.
Wimer, Wm. C.	Philadelphia,	“	A. W. H. Hawkins.
Wolfe, Isaac G.	“	“	John S. Miller, M.D.
Wright, Samuel P.	Smyrna,	Delaware,	Wm. Procter, Jr.
Young, John,	Philadelphia,	Pennsylvania,	John DeLacy, M.D.

THE

AMERICAN JOURNAL OF PHARMACY.

MARCH, 1868.

ON SULPHITE OF MAGNESIA.

By Joseph P. Remington, Brooklyn, N. Y.

This salt having been in request lately, the authorities at the writers command were searched for a formula for its preparation. It did not appear to be a frequent subject for examination, and the published investigations seemed rather meagre and wanting in details.

The only formula appearing, was one from Wittstein's Vierteljahresschrift, as follows:—"Sulphite of Magnesia may be prepared by passing sulphurous acid gas through water holding carbonate of magnesia in suspension; but the salt so obtained is not quite white. A better way is to dissolve 136 parts of crystallized sulphite of soda, free from carbonate and sulphate, in the smallest quantity of hot water and to filter into this hot liquid a concentrated solution of 123 parts of Epsom Salts, the mixture to be stirred until cold. The mass of fine crystals which form are allowed to drain on a strainer, then pressed and dried at a moderate heat. The product should weigh 69 parts."

It is not an uncommon occurrence to find the sulphite of soda of commerce contaminated with sulphate and carbonate, and if made with anything but a freshly prepared sulphite of soda, the yield would be diminished in proportion to the extent of the contamination. There is besides in the above process a small yield of the sulphite of magnesia compared with the quantities of the two salts taken, and the yield was much less than that stated, in the writer's hands. Having had the same experience with regard to saturating the carbonate, suspended in water, with sulphurous acid gas a somewhat different plan was adopted.

Five grammes Jenning's Magnesia (re-calcined) was made into a thick *smooth* paste, with 10 c.c. of distilled water; to this was added slowly with stirring 102 c.c. of aqueous sulphurous acid, sp. gr. 1·037. The liquid on the surface now showed an acid reaction and had a yellow color; after standing a few minutes the supernatant liquid was decanted; the crystals were then placed on a tared filter and washed with distilled water until the washings came through colorless, and a small portion, on being tested with chloride of barium, produced a precipitate which was almost entirely dissolved by hydrochloric acid. The filter and contents were then dried at a temperature not exceeding 100° F., and weighed 15·310 grammes, which was 3·06 times the weight of the magnesia used, or 306·2 per cent.; the theoretical yield should have been 3·95 times the quantity of magnesia started with.* The loss is owing principally to oversaturation, as sulphite of magnesia is very soluble in aqueous sulphurous acid, but it was thought to be best to secure the conversion of the whole of the magnesia by oversaturating, since the excess of sulphurous acid can easily be disposed of by decantation, and, after draining and washing, the crystals are of course free from acid. The sulphite of magnesia as obtained was in very small white crystals, having the peculiar taste of the sulphites, though, on account of its insolubility, the taste was not so disagreeable as that of the more soluble sulphites of soda and potassa. The process was tried on a somewhat larger scale and succeeded. Eight ounces av. of Jenning's Calcined Magnesia was made into a smooth paste with a pint of distilled water and aqueous sulphurous acid U. S. P., sp. gr. 1·035, was added with stirring, until the liquid gave a slight acid reaction; the crystals formed were then allowed to subside, and the clear liquid was decanted; the sulphite of magnesia was then drained on a muslin strainer and washed with distilled water until free from impurities, then again allowed to drain, and dried on bibulous paper; the yield was 1 lb. 8 oz. of dry crystals. The washing can be accomplished most effectually, and with the use of the least water, by allowing the crystals to collect in a stratum on the bottom of the strainer, and then adding just enough distilled water to cover the surface; any sulphate of magnesia is dissolved, and this together with the yellow mother water is displaced by the descending clean water, and the salt is left perfectly white. By this process sulphite of magnesia can be obtained as pure and white as by double decomposition, with economy in the most valuable items, time and labor, the yellow coloration all disappearing by the simple process of washing, and the loss in washing is small, as the salt is difficultly soluble in cold water. The yellow color seems to be caused by an impurity soluble in sulphurous acid (believed to be iron) and it only appears when the acid is in excess, and is therefore a good indication that the magnesia is all converted into sulphite. When made from Henry's magnesia, no yellow color was visible during any step in the process. It is almost needless to say that it was not found profitable to evaporate and recrystallize the mother water.

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* This is the average of several experiments, all conducted on the same plan and with the same quantities, and represents about what the results would be in ordinary practice.

SYRUPUS FERRI IODIDI.

By Edward R. Squibb, M. D.

The difficulty of keeping this preparation without change has again been discussed of late in the *London Pharmaceutical Journal*, and the insufficiency of the various plans resorted to have been pretty well shown in these discussions, and in the communications elicited thereby.

In a very considerable experience with the last officinal process (U. S. P.) the writer has only once seen the syrup become discolored. In this instance a syrup made in September and put up in pound bottles, was found to be all somewhat discolored, though not uniformly so, and all shading off from the surface downward, in January following. This single instance, however, proves that even under ordinary good care and nearly uniform management, some slight accident may determine a liberation of iodine. Dusty bottles, the use of corks instead of glass stoppers, and many other such apparently trivial matters will often start or favor this change, though no such causes can be found in the instance referred to.

In estimating the amount of iodine liberated in this change it was found to be exceedingly small, and practically quite insignificant, even in those bottles which were of the deepest color. No deposite had occurred in any of the bottles, however, and it is doubted whether a deposit ever occurs in any well managed preparation made by any of the later processes. It having been thus shown that the medicinal properties were not materially impaired by this change, since the amount of free iodine was too minute to produce any effect even upon the most delicate condition, a remedy for the discoloration was sought for upon chemical principles, and was soon found in the hyposulphite of soda, and it is the object of this note to publish a method of using the remedy. A solution of fifteen or twenty grains of crystallized hyposulphite of soda in one fluidounce of water is strong enough for the purpose, and from fifteen to twenty minims of this solution is sufficient for each pound of the syrup when the latter is not of a darker color than brown sherry wine. When darker than this, double the quantity is required. The solution is simply added to the discolored syrup in the bottles and shaken up at ordinary temperatures. Syrup so restored is afterward much less susceptible to the change, and the writer has now a specimen which has been freely exposed to the air in a graduated measure for four weeks or more, without any appearance of change even on the surface. The quantity of the solution required to restore the syrup is a measure of the amount of change which may have taken place. The restored syrup is not of the full original green color, but rather more inclined to olive or a very pale brown, and is not quite as transparent. This latter is probably due to the precipitation of a minute quantity of finely divided sulphur.

This remedy having succeeded in one single instance, is considered reliable only so far as its chemical principles are concerned, and is only published in order that its applicability may be tested; and the writer suggests to those interested in the subject who have time to investigate it practically and particularly, to ascertain whether the addition of a minute proportion of hyposulphite of soda to freshly made syrup would not secure it against change.

Brooklyn, Feb. 1, 1868.

PHARMACEUTICAL NOTES.

By C. Lewis Diehl.

CHLORATES OF THE CINCHONA ALKALOIDS.

The quinia salt has lately been quite frequently called for in this city, and for some time I had considerable difficulty in preparing a handsome article. As I was unable to obtain chlorate of baryta in this city, I tried various methods to avoid its use, but finally was compelled to prepare some of the baryta salt, and then following the process of Tichborne, as near as I recollected, for preparing chlorate of quinia, obtained a very handsome product. For the convenience of those that are unable to procure, or wish to prepare chlorate of baryta, I have appended below the formula for preparing this salt, which is essentially that of Bottger, as given in Graham Otto's Lehrbuch der Chemie.

Chlorate of Quinia. Heat 1 gallon of distilled water, to which a small quantity of solution of chlorate of baryta has been added, to near the boiling point, and gradually add 5 oz. of pure sulphate of quinia. Then add solution of chlorate of baryta in fractional quantities, until a portion of the liquid, when filtered from sulphate of baryta, is no longer precipitated by the baryta salt, and forms a decided precipitate on the addition of dilute sulphuric acid. Now filter the solution and allow it to stand for 24 hours, when the chlorate will have crystallized in handsome acicular needles, which are arranged in mushroom-shaped tufts. Drain the crystals in a funnel, and dry in the air on filtering paper, placed on a porous tile.

By following these directions the operator cannot fail to obtain a handsome product. The first portions of the filtrate, as they drop into a cold vessel, will appear milky; but, as the filtrate accumulates, the precipitate is redissolved, and the solution remains clear until all is filtered. This circumstance will serve as a guide to the proper concentration of the solution; for if the solution is more concentrated, the crystals formed will be very small; if less concentrated, it will crystallize in needles an inch or more in length frequently, which when dry possess a pearly lustre, and in individual tufts are very handsome, but present a very poor appearance in bulk. The mother liquors will yield another crop of crystals, but are best reserved for a future operation. A small amount of chlorate of baryta is recommended to be added to the hot water before the addition of the sulphate of quinia, as by that means the latter appears to dissolve more rapidly.

The dried salt, as thus prepared, is perfectly white, and presents a very handsome appearance. It is but sparingly soluble in cold water, but freely soluble at a boiling temperature. It is very freely soluble in alcohol and chloroform, and freely soluble in ether. Placed on heated platinum foil, it forms small oily globules, and immediately thereafter deflagrates, leaving no residue.

Bichlorate of Quinia. During my experiments on the chlorate of quinia I decomposed some bisulphate of quinia with chlorate of baryta, adding the latter to exact saturation. The filtered solution was evaporated to a syrupy consistence, and allowed to stand in a cool place for a number of days, to permit the formation of crystals. No crystals having formed, it was evaporated carefully to dryness, by which it unfortunately became somewhat colored.

This product has a brownish tinge, is freely soluble in cold and boiling water, moderately freely soluble in alcohol, but apparently insoluble in ether or chloroform. When placed on heated platinum foil it immediately explodes with great violence, leaving no residue. I have made no further experiment with this compound, but consider it probable that by proper manipulation a crystalline compound may be obtained.*

Chlorate of Cinchonia. This salt may be prepared from sul-

[* *Perchlorates* of the Cinchona alkaloids are described in the 17th volume of Gmelin's Handbook, made by precipitating their sulphates by perchlorate of baryta. They are all crystalline.—EDITOR AMER. JOURN PHARM.]

phate of cinchonia in the same manner as the quinia salt, using, however, but five-eighths the quantity of water. In manner and form of its crystallization it resembles most closely the quinia salt. It is sparingly soluble in cold water, but apparently more freely than the quinia salt. It is freely soluble in alcohol and chloroform, and very sparingly (if at all) in ether. Placed on heated platinum foil it immediately deflagrates, leaving no residue.

Chlorate of Quinidia may be prepared from sulphate of quinidia in the same manner as chlorate of quinia. This salt crystallizes quite distinctively from the preceding salts, forming solid tubular crystals, which are evidently derived from the rhombic system. It is more sparingly soluble in cold and boiling water than either the quinia or cinchonia salts, moderately soluble in alcohol and chloroform, and apparently insoluble in ether. Placed on heated platinum foil it immediately deflagrates, leaving a small percentage of charcoal.

Solution of Chlorate of Baryta. A. Dissolve 15 oz. tartaric acid in 2 pints of distilled water, add gradually 14 oz. carbonate of soda (in clear crystals), and filter. This forms *bitartrate of soda.*

B. Dissolve 12 oz. pure chlorate of potassa in 2 pints warm distilled water, and filter into solution A. Evaporate to 2 pints, allow to cool, and filter from precipitate. By double decomposition *chlorate of soda* is formed, which remains in solution, and bitartrate of potassa is precipitated.

C. Dissolve 12 oz. oxalic acid in 2 pints water, at a temperature not exceeding 112° F., and filter into solution B. Mix the solutions thoroughly, and expose to a freezing mixture until the temperature has fallen below 32° F., and the precipitate has perfectly subsided; then decant the clear liquid from precipitate, express the residue, and after filtering the expressed liquid add to the decanted portion. The oxalic acid liberates the chloric acid, forming sparingly soluble oxalate of soda, which, by aid of the freezing mixture, is almost entirely precipitated. A small proportion of free oxalic and tartaric acids and oxalates of soda and potassa now contaminates the *solution of chloric acid*, which is otherwise pure.

D. Saturate decantate C with a slight excess of recently precipitated moist carbonate of baryta, filter the solution, evaporate to 2 pints, and again filter.

Thus is formed the *solution of chlorate of baryta* used by me, which is tolerably free from impurity, as the oxalic and tartaric acid contained in the solution of chloric acid unite with baryta to form very sparingly soluble baryta salts, leaving the solution contaminated only with small amounts of chlorate of soda and potassa, which do not interfere in the least in the subsequent preparation of the salt of the alkaloids.

Ferrocyanate of Quinia. The only formula at my command for preparing this compound is that given in the U. S. Dispensatory (from A. J. Ph. xii. 351). This formula directs that 2 parts sulphate of quinia be boiled with 3 parts ferrocyanide of potassium, in a very little water; to pour off the liquor from a greenish-yellow substance, which is then to be washed with distilled water, dissolved in strong alcohol, at 100° F., the solution filtered and evaporated to dryness. When I first prepared the compound according to this formula I obtained a yellow alcoholic solution, which when evaporated on a water-bath was gradually turned quite green, and when dry formed a greenish-yellow powder. Dissatisfied with this result, I prepared another lot, allowing the alcoholic solution to evaporate spontaneously, and the result was *a light yellow substance.* Pelouze found this preparation to be a mixture of pure quinine with a little Prussian blue. It is difficult to comprehend how a mixture of quinine and Prussian blue would form a light yellow compound, and I therefore suggest that it is possible he operated on a ferrocyanate, the alcoholic solution of which had been evaporated by heat. It is evident that the compound, whatever it may be, is decomposed by heat when in alcoholic solution, and the coloration is such as might be produced by the formation of Prussian blue in a yellow solution. From these facts I am inclined to believe that the light yellow ferrocyanate is a true compound, which is, however, very readily decomposed by heat.

Elixir Calisaya and Elixir Calisaya Ferrata. Within the last few years these elixirs have become quite popular, and are consequently put up in various forms and of various compositions. The chief trouble that I have experienced in these preparations has been their tendency to form precipitates or become darkened by age; but until lately I have not made any decided effort to overcome these objections. The most popular elixirs now possess very little or but a pale yellow color, and I here offer a formula that will furnish a preparation, which, containing the usual quantity of calisaya bark and aromatics, has but very little color, will mix with pyrophosphate of iron, in any desirable proportion, without changing, and will remain perfectly bright and transparent.

1. Take of calisaya bark 24 oz., orange peel 16 oz., coriander 4 oz., cinnamon 3 oz., cardamom 1½ oz., anise 1 oz. Bruise these ingredients finely, moisten with a menstruum consisting of 6 parts by measure of water and 2 parts alcohol, ·835, and pack into an appropriate percolator, in which allow it to macerate for 24 hours. Then add the same menstruum until 5 gallons of percolate is obtained.

2. From 5 pints (or more if required) of solution of tersulphate of iron prepare hydrated sesquioxide of iron, according to the direction of the U. S. Pharm. Mix the product thus obtained with the percolate (1), and shake frequently for 3 days, or until a portion filtered off has but a slight yellow color. Then express the liquid from the precipitate, and filter through paper.

3. Dissolve ½ oz. oil of orange (fresh) in 1½ oz. alcohol fort., triturate with 8 oz. carbonate of magnesia, and gradually add filtrate (2). Agitate well, and filter on 220 oz. of sugar, which dissolve by agitation, and filter.

If desirable, the simple elixir may be colored with a mixture of caramel and cochineal, as solutions of the latter become gradually darkened by the pyrophosphate of iron.

The samples that I made, 3 months ago, of ferrated simple and colored elixir, are at this date perfectly bright, and indicate no inclination to change, although freely exposed to light and air.

Louisville, Ky., Jan. 27th, 1868.

ADDITIONAL NOTE RELATIVE TO THE PLANT YIELDING OSHA ROOT OF NEW MEXICO.

By E. Durand.

Prof. Procter.

My Dear Sir.—I have just read your notice on the *Indian Osha Root*, published in the last May number of the American Journal of Pharmacy, (page 202, vol. xxxix).

Your correspondent, Mr. Jacob Krummeck, of Santa Fé, New Mexico,* was very unbotanical in his attempt to describe the leaf of the Osha plant, when he wrote that it had *a small oval leaf.* He was thus mistaking for a leaf the segment or lobe of a large decompound leaf.

In the new package of Osha roots, sent to you last summer, by the same gentleman, there are large leaves still attached to the crown of the roots, and those leaves are not less than one foot long, including the petiole ; they are 3—5 pinnately divided with deeply laciniated segments, rather lanceolate than oval.

When I suggested that an umbelliferous plant with small oval leaves must belong to sections *Saniculeæ* or *Ammineæ*,† and might possibly be referred to the genus *Eryngium*, several species of which possess aromatic roots, I was misled by this description of Mr. K., which gave the Osha plant a *small oval leaf.* But now, that I have seen the large decompound leaves, my view is entirely changed, without, however, being able, as yet, to determine the plant with any degree of certainty, on account of the absence of the most characteristic parts of a plant, (the flowers and ripe seeds), which again Mr. K. has omitted to send you.

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* The package of Osha, sent last summer by Mr. Krummeck, was collected without any flowers or fruit, leaving its real botanical name yet doubtful. The Editor intends pursuing his examination of the root and its peculiar volatile oil and hopes that Mr. K. will make an effort to send him the flowers and fruit of the Osha. This may be done in a letter by post, by folding the plant (including the stem and just enough of the root to identify it with that heretofore sent) while fresh, then drying it so that it shall not mould, with a few lines giving the color of the flowers and seeds before drying, if they change. W. P., Jr.

† [By a misprint in our May (1867) number, vol. xxxix., page 205, last line, these words are made *Sarriculeæ* or *Mulineæ*, instead of *Saniculeæ* or *Ammineæ*. Our subscribers will oblige the Editor by making this correction on reading this note.]

Consulting my herbarium and those of the Academy of Nat. Sciences, I find in them specimens of an umbelliferous plant, very common in Western Texas and New Mexico, which I have many reasons to consider as this very Osha plant. It is one that Dr. Engelmann and Gray have described in *Plantœ Lindheimerianœ* under the names of *Daucosma laciniata ;* "*Herba-glabra, odore forte, Dauci* (*undè nomen*), *caulibus* 2–3 *pedalibus, ramosis, striatis, faretis ; foliis ternati-quinati-sectis ; segmentis* 3-*partitis ; lobis laciniatis, venosis, lanceolatis.*" This plant is said to cover large patches, of moist prairie land, &c. Thus far this description agrees perfectly with the Osha of Mr. Krummeck. Immersed in boiling water, this root has a very strong smell of carot.

When Mr. K. sends you good specimens of the plants (ripe seeds, flowers and all), I doubt not that I shall be able to determine it with certainty. The vegetation of New Mexico and Texas is nearly as well known as that of Pennsylvania, these regions having been successively visited by excellent botanists and experienced collectors, such as Lindheimer, Fendler, Chas. Wright and others. E. DURAND.

Philadelphia, Dec. 5th, 1867.

NOTE ON DR. WORMLEY'S TEST FOR FREE SULPHURIC ACID.

Middletown, New York, Jan. 30, 1868.

MR. EDITOR.

Dear Sir.—At the close of a review of Dr. Wormley's work on "Micro-chemistry of Poisons," in the Sept. No. of the Journal, 1867, page 479, reference is made to his test for minute quantities of *free* sulphuric acid, viz., Veratria.

In making an application of this test to detect sulphuric acid in cider vinegar, I failed to get satisfactory reactions, and found that the presence of organic matters, such as grape sugar, cane sugar and extractive, prevented or masked the reactions, giving a brown or black residue.

Pure acetic acid does not interfere with the test.

JAMES T. KING.

NOTE ON GLYCEROLE OF IODIDE OF IRON.

By R. Lewellen.

St. Louis, Mo., Jan. 24, 1868.

To the Editor.

Dear Sir.—Having tried for several years various formulas for the formation of Liquor Ferri Iodidi, and having found that sugar would preserve it from the action of oxygen only a short time, I was led to try glycerin as a substitute for the syrup of the U. S. Pharmacopœia. It preserves the Iodide of Iron and, I think, adds to its therapeutic effects. I send herewith a sample which has been exposed to the light for three years. Believing this will meet a desideratum and prove a valuable substitute,

I remain, &c.,

R. Lewellen.

Note by the Editor.—It has long been known that glycerin will substitute sugar as a preservative from oxidation in the case of iodide of iron. It was suggested at the meeting of the American Pharmaceutical Association, held in Philadelphia, Sept. 1857, by Frederick Stearns, of Detroit, and again by Mr. Gordon, at the Cincinnati Meeting, Sept. 1864, (see the proceedings of those years). The specimen sent, three years old, is in perfect condition, and at the College of Pharmacy, Mr. Stearn's specimen, over ten years old, yet exists in good order, but it is hermetically sealed, just as Mr. Lewellen's specimen is, and hence is free from oxidation. Exposure to the air will gradually change it. We believe a properly made officinal syrup of the iodide of iron, enclosed in small bottles to suit the demand of a business, is the dispenser's best method of protecting this preparation, using dry bottles, closing them effectually and keeping the syrup exposed to the light. Mr. W. A. Tilden (Pharm. Jour., Dec. 1867,) is of the opinion that direct sunlight, in decolorizing previously colored syrup of iodide of iron, deoxidizes it at the expense of the hydrogen of the sugar. Be this as it may, our experience, for many years past, is that the carefully made syrup, put up in vials as above, and kept where the direct sunlight reaches it daily, neither undergoes change of color nor deposits any sediment, and is free from acidity. If, however, a vial is left half full, with the cork imperfect, a coloration commences, followed, after a time, by a sediment.

Dr. Squibb has pointed out a means of restoring the bright color of the iodide when the discoloration is due to free iodine, (see page 99). Mr. Tilden has suggested the plan of keeping the syrup in a large vessel with a tap, and its surface covered with a stratum of olive oil. This plan may apply on a very large scale, but is not to be recommended to the dispenser unless kept in a glass vessel, terminating with a funnel, the neck of which is provided with a faucet or a compressed gum-tube valve, so that the last portions may be drawn off without danger of being mixed with globules of oil. The change which occurs after it is dispensed will not be remedied completely by any of these suggestions. Even a coil of wire, while it keeps the syrup free from free iodine, don't prevent the oxidation and deposit. We believe the moderate change which occurs during the consumption of two ounces of the syrup will not materially injure or modify its therapeutic value.

When very long kept, say for fifteen years, we have known a change in the saccharine matter to occur, by which a dark color and caromel odor was acquired not discharged by agitation with iron filings. W. P., Jr.

PILULA FERRI IODIDI.

T. B. Dorsey.

To the Editor of the American Journal of Pharmacy.

That the pilular form is the best as well as the most convenient mode for prescribing the iodide of iron all, I believe, are ready to admit, and the difficulty attending the preparation of these pills I have no doubt is equally apparent. Many Pharmaceutists, as well as myself, have found the present officinal formula not well suited to the wants of the dispenser. In the officinal process we are directed to evaporate the whole to a pilular consistence, which, when performed with the greatest possible care, is attended with very uncertain results. Sometimes we find our mass, when cool, quite difficult to separate into pills, owing to its extreme elasticity, and when made they will not retain their proper shape. The writer has seen and tried the various published formulas for the preparation of these pills, and has also sought to devise something of his own with a view to an improvement. The method presented by Mr. Bedford in the American Journal of Pharmacy, xxxvii. 184, forms a more pliable mass than the officinal, and is very convenient for dispensing, but is objectionable, not only on account of the ready tendency to decomposition of the honey used, but it does not furnish so dense a mass and consequently is not so permanent as the officinal pill. After repeated trials I have been led to adopt the following formula which, with ordinary skill and care, will furnish a pill as handsome in appearance as the much esteemed Blancard, and fully equal to the officinal. Great care, however, is necessary in the selection of the reduced iron, as much of it in the market will be found utterly worthless.

Take of Iodine, 80 grains.
Reduced Iron, 40 grains.
Sugar, in fine powder, 100 grains.
Gum Arabic, in fine powder, 20 grains.
Water, 50 minims.
Marshmallow, in fine powder, 80 grs. or q. s.

Rub the Iodine, in a glass mortar slightly warmed, to a fine powder; then add the water and afterwards the reduced iron in small portions. Triturate until the mixture becomes a dark gray color and there ceases to be any indication of free iodine to the usual test.

The sugar and gum arabic are now to be added and the mixture rubbed into a smooth pasty mass. Lastly, add the marshmallow, and when thoroughly incorporated, divide into ninety-six pills.

In forming the pills a small quantity of reduced iron may be used as a dusting powder to prevent them adhering together, and still further protect them from the oxidizing influence of the air. They are now to be only partially dried at a temperature not exceeding 120° F., and when cool coated with balsam tolu. Each pill contains one grain of iodide of iron with an excess of reduced iron, and are prefectly devoid of iodine odor. Pills prepared nearly one year ago, in accordance with the above formula, upon examination show no sign of decomposition.

Dresden, Ohio, Feb. 6, 1868.

ON OXALATE OF IRON.

By J. B Moore.

The publication in the January number of the American Journal of Pharmacy, of the communication of Mr. Simms, accompanied by the letter of Dr. Schæffer, of Washington City, on the Oxalate of Iron, has stimulated a demand for it among the apothecaries of this city. I, like perhaps many others in my profession, have received prescriptions for the article without being able to supply it, and in the absence of any *definite* formula for its manufacture, devised the following, which I here present for the convenience of those who may have occasion to make it.

Take of Protosulphate of Iron, (pure) ʒ xviij. grs. xxxij.
Oxalic Acid, ʒ viij. grs. xxiv.
Water, three and a half pints.

Dissolve the sulphate of iron and oxalic acid separately; the acid in one and a half pints of the water, and the sulphate of iron in the remaining two pints. Strain both solutions through muslin, to remove any accidental impurities; then mix them, and, having stirred the mixture, set it by, that the precipitate may subside. Collect the latter upon a filter and wash with water until the washings pass devoid of acid reaction upon litmus paper. Then dry the precipitate at a temperature not exceeding 120°.

To facilitate solution, the acid in the above formula may be powdered, and the sulphate of iron finely bruised and both afterwards weighed, any loss occuring during the process being supplied by fresh additions of either substance.

As the oxalate is slightly soluble in dilute sulphuric acid, a small loss of the precipitate is sustained by a portion being carried off in the supernatant liquid.

Oxalate of iron is a beautiful canary-colored powder, nearly devoid of smell or taste, and decomposed by the alkalies and their carbonates. These substances are therefore incompatible with it in prescriptions.

The oxalate being a pure and permanent proto-salt of iron, and possessing little or no astringency, and not liable to produce constipation nor any functional excitement or derangement, which the use of other chalybeate salts often induces, and being so easily borne by persons whose idiosyncrasy debars the use of other salts of the metal, will, I have no doubt, render it a very popular and useful remedy with the medical profession.

The usual dose, according to Dr. Schæffer, is from two to three grains.

As it is not soluble to any considerable extent either in water, alcohol, syrup or glycerin, I should think that the best mode of administration would be in the form of pill. As much as five grains can be made into a pill of convenient size, but for those who may have an aversion to medicine in this form, it may be prescribed in powder, accompanied by directions that it be mixed with sugar and water, syrup of orange, molasses, or any other palatable and convenient vehicle.

Dr. Schæffer says, "since the first use of oxalate of iron, it has been ascertained that in cases of excessive irritability, when ordinary preparations of iron could not be tolerated, the oxalate was taken with the greatest benefit." (American Journal of Pharmacy, January, 1868).

After reading the above, I felt desirous of seeing the oxalate of iron tried in some case in which the other chalybeate preparations could not be taken on account of constitutional peculiarity, and knowing a medical friend whose health has been extremely delicate for some time, and whose anæmic condition imperatively demanded the use of iron, and being also aware that he had tried to take almost every preparation of the metal in the Pharmacopœia, but could not find one that he could tolerate, even in the minutest dose ; in fact his constitutional susceptibility being so great that he could not bear two drops of the Tr. Chl. Iron, without experiencing the most intense headache, excited circulation, &c., I therefore called his attention to the oxalate and induced him to try it, which he did, by commencing with one grain doses, continued for several days, when he increased the dose to two grains, and is now taking three grains three times a day, after meals, which has produced strongly marked tonic effects, unattended by the slightest unpleasant symptom. This would seem to corroborate the statement of Dr. Schæffer.

Dr. Schæffer has made two analyses of this salt, and says that it is "without water of crystallization." (American Journal Pharmacy, January, 1868).

Prof. Procter, in a foot note to Dr. Schæffer's letter, quotes Gmelin, Handbook, vol. ix. p. 156, 1855, which says—

"Artificial oxalate of protoxide of iron contains 2 eq. of water for each eq. of base; whilst the native oxalate (Humboldtite) is only sesqui-hydric.

And Mr. Reynolds, (American Journal of Pharmacy, March, 1867), who has also analyzed it, gives as its formula, $FeO, C_2O_3 + 4HO$. According to this it would consist of one-third of its weight of water.

This question of its composition should be definitely settled, as it is of importance to the therapeutist in enabling him more accurately to apportion the dose.

Philadelphia, February, 1868.

SYRUP OF LACTUCARIUM.

By James Kenworthey.

In reading over the proceedings of the American Pharmaceutical Association, I observed one of the queries propounded by that body was, whether the U. S. P. formula for Syrup of Lactucarium could be improved, and if so, how.

Syrup of Lactucarium, as made by the U. S. P. formula, is a milky, unsightly preparation, with a rank, goaty odor, making it objectionable to delicate or sensitive patients, and as Pharmaceutists of to-day have to compete with sugar pellets and powders, it behooves us to make our preparations as agreeable in taste and appearance as possible.

Below I give a formula with which I have been very successful, answering in every particular.

Take of Lactucarium, one troy-ounce.
Sugar in coarse powder, fourteen troy-ounces.
Orange Flower Water, one fluidounce.
Powdered Pumice Stone, two troy-ounces.
Purified Animal Charcoal, one troy ounce.
Diluted Alcohol and water, of each a sufficient quantity.

Rub the Lactucarium with sufficient diluted alcohol, gradually added, to bring it to a syrupy consistence. Then introduce it into a conical percolator and, having carefully covered the surface with a piece of muslin, gradually pour diluted alcohol upon it until half a pint of tincture has passed. Evaporate this, by means of a water bath, at a temperature not exceeding 160°, to two fluidounces; rub this in a mortar with the powdered pumice stone and two troy-ounces of the sugar, then with four fluidounces of water gradually added and filter, letting the filtrate drop into another funnel with a filter and the purified animal charcoal in it; after this has all passed through the filter, gradually pour on water until the filtered liquid measures eight fluidounces, then add the orange flower water and the remainder of the sugar, dissolving by agitation, and strain through coarse muslin.

By following these directions carefully, the result will be a beautifully clear syrup with the flavor and appearance of Aubergier's French preparation and all the medicinal properties of that made by the process of the Pharmacopœia.

Philadelphia, Feb. 1868.

SYRUP OF LACTUCARIUM.

By Robert F. Fairthorne.

When this is made by the formula of the United States Pharmacopœia, a turbid syrup, having a disagreeable odor, is produced, neither pleasing to the eye nor palate of the fastidious public. In order, therefore, to overcome these objections, without interfering with its medical properties, I have devised the following formula, by which an agreeable preparation is obtained:

℞.	Lactucarii,	℥i.
	Alcoholis Diluti,	q. s.
	Ætheris,	℥iss.
	Sacchari,	℥xiv.
	Syrupi,	q. s.
	Aquæ Aurantii Florum,	℥ii.
	Aquæ Distillatæ,	℥iv.

Ft. Syrupus.

Rub the Lactucarium (after having been thoroughly bruised) with sufficient diluted alcohol to make it of a syrupy consistence. Introduce it into a percolator, and after having carefully covered the same with a piece of filtering paper, retained in its place by a flat weight (the lid of a glass jar answers well enough) pour on it diluted alcohol in such quantity as to produce half a pint of tincture. Evaporate by means of a water bath, at a temperature below 160°, to two fluidounces. Agitate this product for about ten minutes with the ether. Allow it to rest for five minutes, and draw off the lower dark-colored liquid. Place this in an evaporating dish over a water-bath, and apply heat so long as the odor of ether is perceived. Then filter through cotton, mix with the orange-flower and distilled waters, and add this to the sugar. When dissolved make the syrup measure a pint by the addition of a simple syrup.

This will be a clear, transparent syrup, of a straw color, and possessing the pleasant flavor of the orange flower.

Philadelphia, *Feb.*, 1868.

ON SUPPOSITORIES OF ASSAFŒTIDA.

By Robert F. Fairthorne.

As assafœtida is sometimes ordered by physicians to be administered in the form of suppository, and as there is frequently much inconvenience attending the preparation of the same, as well as delay caused by the difficulty met with in mixing that gum with the butter of cacao, I would bring to your notice the following method for making the suppositories, which will be found to save much time and trouble.

An ethereal fluid extract of assafœtida is first made by the following formula:

℞.	Assafœtidæ,	℥i.
	Etheris Fortioris,	℥iij., ʒvi.
	Aquæ,	ʒiij.

The gum is cut into pieces about the same size as peas, then agitated occasionally in a bottle with the ether and water for two or three days, by which time the assafœtida will be disintegrated, the water uniting with the gummy portion of the same, forming a soft paste, whilst the ether containing the resin and volatile oil floats above this. The contents of the bottle are strained through thin muslin, in order to separate any foreign substance, such as chips of wood, sand, &c., from the fluid portion. It is now ready for use, and employed in the following manner:

℞. Ext. Assafœtidæ Fl. (ethereal) ℥i., ʒi.
Olei Theobromæ, ʒxij. ut q. s.
Ft. Suppositorii, No. xxiv.

The ethereal extract is placed in a capsule over a water-bath. After the ether is driven off by the heat (which occurs in about five minutes), melt the butter of cacao in the same vessel with the residuum. Stir these well together for a few minutes, and pour into moulds.

It will be found, however, that a dense orange-colored substance persistently remains at the bottom of the vessel, which will not mix with the fat, even though stirred constantly until cool, when this heavy substance will have become solid, and, upon examination, will prove to be resin, from which, however, the volatile odorous principle has been removed by the melted butter.

Each of the suppositories thus made will contain the medicinal virtues of about five grains of the gum. They are uniform in appearance, and possess in a very marked degree the characteristic odor of assafœtida.

Philada., *Feb.*, 1868.

ON THE EXTRACTION OF CANTHARIDIN.

By Dr. A. Fumouze.

It was shown by Robiquet that the remarkable action of *Cantharis vesicatoria* resides in the properties of the cantharidin; and he extracted this principle by exhausting the flies with alcohol, distilling off the excess of the solvent, and leaving the residue to deposit crystals. Procter suggested, a few years ago, to replace the alcohol by chloroform, inasmuch as this latter liquid dissolves cantharidin with much greater facility than alcohol.

But there arises in both processes the same difficulty in separating the cantharidin from the fatty and other matters by which it is accompanied. To overcome this difficulty it would be necessary to find a liquid which, whilst exerting no action upon the cantharidin, should have the property of dissolving the substances which have been simultaneously extracted. Bisulphide of carbon possesses this property; and, by taking advantage of this circumstance, it becomes an easy task to prepare cantharidin in a state of purity.

The process is simply as follows:—The crushed flies are exhausted by chloroform, the solution is distilled to dryness at a very gentle heat, and the green residue heated with bisulphide of carbon. By this means the fatty, resinous, waxy, and other matters are dissolved, and the cantharidin remains; this last is thrown upon a filter washed with bisulphide of carbon, and crystallized from chloroform.

It is obvious that, omitting the crystallization, this is at once a quantitative process for the estimation of the blistering principle.

Cantharidin exists in good samples of the flies to the amount of from 4 to 5 parts in 1000; its formula, as usually given, $C_5H_6O_2$, demands revision. Chloroform is the best solvent of this principle, but it dissolves also in acetone, the oils and fats, and, to a smaller extent, in alcohol and ether.

It may be sublimed without change, but its well-known serious effects upon the animal economy render it necessary to use all caution in this experiment. Accompanying this crystalline body, upon which the activity of cantharidin depends, is a number of others, the most notable of which as regards quantity is the fat.

The following are the substances which have been extracted from the blistering-beetle, together with the action of various solvents.

1. Cantharidin; soluble in chloroform, insoluble in bisulphide of carbon.

2. Fat.

3. Resinous matter; soluble in chloroform and in bisulphide of carbon.

4. Waxy matter; soluble in bisulphide of carbon and in boiling alcohol, less soluble in chloroform.

5. Yellow matter.

6. Red matter.
7. Extractive; soluble in water.
8. Acetic and uric acids.
9. Essential oil.
10. Parenchymatous matter; insoluble.—*Lond. Pharm. Journ., from Journ. de Pharmacie et de Chimie.*

ON THE ARTIFICIAL PRODUCTION OF BENZOIC ACID FROM NAPHTHALIN.*

By Dr. Adolf Ott.

Benzoic Acid is a crystallizable, soft, white body, inodorous when pure, but smelling like gum benzoin when gently warmed; it usually has a faint aromatic odor, sweetish taste, but produces a burning sensation in the throat. Litmus is feebly reddened by it; it fuses at 250° Fahr., sublimes at 300° Fahr., and boils at 462° Fahr., yielding a vapor of the sp. gr. 4·27. It exists in benzoin, in the tolu balsam, in the gum of *Xanthorrœa hastilis*, in castor, and has also been met with in the urine of man and herbivorous animals, &c. Benzoic acid is also found by the oxidation and decomposition of oil of bitter almonds, protochloride of benzoil, hippuric acid, &c., and furthur by the action of a solution of caustic baryta on populin and other organic compounds. It has hitherto, nevertheless, only been prepared from the gum benzoin, either by subliming the same—a process existing since 1703 (*vide* Turquet de Mayerne, "Pharmacopœia in Opermedio." London)—or by a process, due to Whœler, which we will here not further describe, as it can be found in nearly any larger hand-book of chemistry. We only will mention that it is used in medicine to some extent, viz., against affections of the throat; largely in the manufacture of aniline blue; and for the preparation of tobacco sauces.

This interesting substance, of which the chemical formula is $C_{14}H_6O_4$, has now lately been produced, at a rate allowing the manufacturer large profits, from a substance which, in its crude state, can be got for less than one cent a pound. In the following I will proceed to describe the process, but first mention something about naphthalin:—

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* A paper read before the Polytechnic Association of the American Institute.

This hydrocarbon (formula $C_{20}H_8$) was discovered in 1820, by Garden, in the coal-tar of the gas works, and studied by Liebig, Faraday, Wœhler, and others. It is a colorless, inflammable solid, of a burning aromatic taste, and peculiar smell. Its specific weight is 1·048, its melting point 175°, and its boiling point 428° Fahr. It sublimes unaltered in laminæ, and can also be obtained in rhomboidal crystals from its alcoholic solution. It is inflammable, and burns with a very smoky flame. Its derivates have principally been studied by the celebrated Laurent.

The process now by which this hydrocarbon is transformed into benzoic acid is the following:—

(1). *By the process of Laurent.*—The naphthalin is transformed into the the *a* modification of the bi-proto-chloride of naphthalin, $C_{20}\ H_8\ 2Cl_2$.

(2). The bi-protochloride of naphthalin is converted by oxidation into phtalic acid, $C_{16}\ H_4\ O_6\ 2HO$, and the latter into phtalate of ammonia, $C_{16}\ H_4\ O_6\ 2NH_3$.

(3). We obtain then the phtalamid, $C_{16}\ H_5\ NO_4$, simply by subjecting the phtalate of ammonia to distillation.

(4). By distilling the product obtained by process 3 with hydrate of lime, benzonitril, $C_{14}H_5N$, is formed.

$$C_{16}H_5NO_4+2CaO=C_{14}H_5N+2CaO,\ CO_2.$$

(5). In boiling the latter with a solution of caustic soda, benzoate of soda is formed, from which benzoic acid is precipitated by hydrochloric acid.

This is, in short, the process as followed by John Castelhay, of Paris, and of which Menier, the Secretary of Class 44 of the International Exhibition in Paris, says that it is the most important discovery made in technical chemistry since the London Exhibition of 1862.—*Chem. News, Dec.* 13, 1867.

ON THE MANUFACTURE OF SALTPETRE.

By J. H. Swindells.

I have lately examined several lots of refuse (muriate of soda, &c.) from various saltpetre makers, and find a serious loss of potash and other materials. The refuse from saltpetre works is mostly sold for manure, either alone or mixed with other substances. From the analysis I give below it will be seen that this refuse in many cases contains a large amount of potash, &c., thus showing bad and careless working.

Analysis of muriate of soda.

Muriate of soda, ...	70·50
Muriate of potash, ...	8·81
Nitrate of potash, ...	6.15

The rest was made up of sulphate of lime, insoluble matter, and water. Another sample showed very near working; it gave me

Muriate of soda, ...	97·13
Nitrate of soda, . , . .	1·10

Insoluble matter, sulphate of lime, &c., formed the remainder.

Twelve samples of refuse gave me an average of 5·6 per cent. of potash lost in working. Several samples gave me a large amount of insoluble matter, owing, I should imagine, to the "sweeping up" of the factory, and to the muriate of potash, which in many cases I know contains a larger amount of foreign matter than it ought to do, although it is sold, generally speaking, with a guarantee that it contains "80 per cent."

I will now give a short account of the method generally followed in the manufacture, and a recommendation of my own to prevent loss of materials. In all the manufactories I have been able to visit the process was as follows: A certain weight of muriate of potash and nitrate of soda was put into an iron pan along with a quantity of water. The steam was then blown into the "mixture," which is stirred about till such time as it is thought the muriate and nitrate are dissolved. The liquid is then run or syphoned into a tank, and after a certain time the resulting crystals are removed, and invariably refined. The last process is simply done by dissolving down the crystals and re-crystallizing. I found that no hydrometers were used for ascertaining the density of the liquids, but that everything was done on the "guess" principle. By following this process a loss will always occur; for how is it possible to tell when all the materials have thoroughly dissolved? Moreover, it takes a longer time to dissolve the materials together than it would occupy if the muriate and nitrate were dissolved separately.

The chemical action is too well known to be described here; I will, therefore, proceed to consider the best way of preventing any loss of materials. I would recommend that the muriate of potash should be dissolved in as little water as possible; then dissolve the nitrate of soda also in as little water as may be convenient, add the two solutions together and boil for one hour or so. This will precipitate a portion of the muriate of soda, which may be "fished" out of the pan. The liquid will now be found to have a specific gravity of about 1·200, 1·250, or 1·275, according to the manner in which the "dissolving and boiling" down is conducted. The liquid, after remaining at rest 2 hours or so, may be run into the coolers in the usual way to allow the nitrate of potash to crystallize out of the liquor; of course all the nitrate of potash does not crystallize out. A quantity remains in the "mother liquor," a portion of which may be used for dissolving the raw materials. The mother liquor, however, should not be too strong, as neither the muriate nor nitrate dissolve well in strong mother liquor; about 15 Twaddell will be found about the strength. When the "mothers" begin to increase and become too many for "dissolving" purposes, they must be salted down and crystallized. This is done by placing them in an evaporating pan, and boiling them down to about 35° or so, Twaddell; care must be taken to remove the muriate of soda as it falls to the bottom of the pan. This may be done by means of perforated ladles. There is sure to be a little nitrate of potash clinging to the muriate of soda, and the manner of separating this must be considered. Even when there is so much as 5 per cent. of potash mixed with the muriate of soda, it will scarcely pay to extract it, unless coals are very cheap; for the entire mass would have to be dissolved, and the liquor evaporated down to the crystallizing point. I would recommend the following plan: As the muriate of soda is taken out of the pans it should be placed in a strong tub with a kind of filter bottom—this tub to be provided with a tight-fitting top, through which a pipe passes for the admittance of steam. After the muriate of soda has been put in this tub and the top secured, the steam is blown through the mass for 15 minutes, and the liquor run off by means of a tap placed at the bottom of the tub. This liquor may be used for dissolving the raw material, and all over and above that required for this purpose must be evaporated down along with the mother liquor. By all means, the manufacturer, if he is not capable of making his own analyses, should have analyses made from time to time of his muriate of soda; he will then be able to form the best opinion of what he is doing, and thus avoid any unnecessary loss. Owing to the low price of saltpetre, very close working is required to make the business pay, and adulteration is coming much into vogue. The adulteration is practised by the manufacturer, and the saltpetre also meets with sophistication after it leaves his hands. The most glaring adulteration is common salt and alum. The muriate of soda from saltpetre making, is cleansed and mixed in the proportion of 2 cwt. to the ton of petre. In the process of refining the saltpetre, from 2 to 3 cwt. of alum is sometimes used. Nitrate of potash adulterated like this will not of course do for the gunpowder makers, but for many other purposes this adulteration often passes unnoticed.—*Lond. Chem. News, Nov.* 1, 1867.

"MATA."

By E. S. Wayne.

This herb, called "mata" by the Mexicans, is in common use in New Mexico, as an addition to tobacco in smoking. A small quantity of it is rubbed to a coarse powder in the palm of the hand, and then mixed with the tobacco, to which, in burning, it imparts a very agreeable odor, and at the same time prevents or corrects the disagreeable odor of stale tobacco smoke upon the clothing, and in apartments.

It was introduced into use here by Major McCrea, U. S. A., and since has become quite in demand by smokers (those who use the pipe). I have had much difficulty in obtaining any quantity of the article, and then only at an enormous cost. I was fortunate enough this season to obtain a quantity of the seed of the plant, and have been successful in growing a crop, specimens of which are herewith sent, also some of the seed. The plant is rather insignificant in size; the infloresence is very minute, white, corolla entire, and finely cleft. I have not been able to make out its natural order, or to find a description of it in any work at my disposal. It is not described in the Pacific Railroad Survey (in the botanical section of that Government report).* The odor, when burnt in a pipe, is similar to that of the tonqua bean, and I presume it owes the same to the presence of coumarin in the plant.—*Proc. Amer. Pharm. Assoc.*, 1867.

GIZZARD OF THE SOUTH AMERICAN OSTRICH.

By E. S. Wayne.

The inner coat of the gizzard of the ostrich is used in Buenos Ayres in powder, as a remedy for dyspepsia. The specimen herewith sent was presented to me by Mr. T. B. Coffin, who has been for some time past a resident of Buenos Ayres, now of New York, and a member of the firm of C. E. Griswold & Co., manufacturers of feather dusters, and importers of ostrich feathers. The specimen was handed to me with the request that I would make some experiments in relation to its value as a source of pepsin; also as to its value in substance or powder, compared with pepsin, as it was supposed, from the popular belief in the fabulous digestive powers of the ostrich, that a pepsin, or similar substance superior to pepsin, from the stomach of the calf, pig, &c., might be obtained from it. The limited time I have had for experiment has prevented my making any further report at present. I am making comparative tests, the results of which will be given at some future time.—*Ibid.*

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* At the request of Professor Wayne I have examined the specimens sent. The seeds consisted of the empty involucres and the achene (with the pappus much broken) of a Eupatorium. The dried plant was without flowers, but bears a striking resemblance to some of our Northern species of this genus, and corresponds closely with the description of *Eupatorium incarnatum*, Walter. This species is indigenous to Texas, but is found as far east as Florida and Georgia. J. M. Maisch.

ON THE CHEMICAL CONSTITUTION OF FLUORINE COMPOUNDS, AND ON THE ISOLATION OF FLUORINE.

By M. Prat.

The following is a full abstract of M. Prat's memoir on this subject, recently communicated to the French Academy. The complete paper will not be published until the chemical referees of the Academy have reported on it.

M. Prat considers that chemists have hitherto been mistaken as to the composition of fluorides and the theory of fluorine. He regards the fluorides as in reality oxyfluorides, and the equivalent of fluorine as consequently much higher than is usually supposed. He represents fluoride of calcium by

2	equivalents of	calcium, . . .	40·0
1	“	oxygen, . . .	8·0
1	“	the new fluorine, . .	29·6
			77·6

This accords with the known analyses of fluor spar, since it contains 51·5 per cent. of calcium.

By doubling the old equivalent of fluorine (19) we get 38, that is to say nearly the sum of the equivalents of oxygen (8), and of the new fluorine (29·6)=37·6.

According to M. Prat, in order to obtain true fluorine it suffices to heat fluoride of calcium with chlorate, or rather with perchlorate of potash, since it is only after the formation of this latter salt that the reaction takes place. Oxygen is disengaged and also a product which silver absorbs. The compound so formed is fluoride of silver, insoluble in water, soluble in ammonia, from which it is precipitated by nitric acid, and more rapidly altered in the light than chloride of silver. Neither chlorine nor oxygen attack it even at the fusing point of the fluoride. It is, however, decomposed by potash at a dull red heat, and this reaction permits its analysis: it contains—

Silver, . .	0·785 . .	108·0=1	equivalent.
Fluorine, . .	0·215 . .	29·6 “	“
Fluoride of silver,	1·000	137·6	

This fluoride of silver, insoluble and very stable, and having great analogy with the chloride and the other compounds of this family, differs essentially from the soluble fluoride of silver of chemists, which, according to M. Prat, is a compound of—

AgFl, AgO, HO, in the hydrated state;
AgFl, AgO, in the anhydrous state.

Fluorine combines with chlorine. To obtain this compound it is sufficient to pour a weak solution of the hydrofluoric acid of the chemists into a solution of hypochlorous acid: there form

$$\mathrm{FlH, HO + ClO = {}_2HO + FlCl.}$$

Fluoride of chlorine is gaseous, of a more intense color than chlorine. It converts silver into a mixture of chloride and fluoride.

Fluorine may be isolated, according to M. Prat, by heating fluoride of lead of chemists (1 part) either with nitre (5 parts) or with binoxide of manganese (2 parts); oxygen and fluorine are evolved. A platinum alembic must be used. The oxygen is removed from the mixture by passing over fragments of heated baryta.

Fluorine is gaseous, almost colorless, of a chlorous odor, visibly fuming in the air, incombustible, and heavier than air. It bleaches indigo, and reddens and bleaches litmus. Ammonia produces fumes with fluorine, and will thus detect traces of it. It immediately decomposes water at the ordinary temperature. It combines with hydrogen in diffused light. Fluorine decomposes hydrochloric acid gas, and eliminates bromine and iodine from their compounds. It unites with boron and silicium, and with all metals of the first five groups.—*Lond. Chem. News, Jan.* 10, 1868.

NOTE ON THE PREPARATION OF CRYSTALLIZED PHENIC ACID.

By W. E. Bickerdike, F.C.S.

It is seldom that crystallized phenic acid can be obtained by the common process described for its preparation in the text-books; and even when the crude liquid does crystallize, the still fluid portion contains the largest amount of the pure acid.

The following process I find always to give good results:

The impure liquid separated from tar oils in the usual manner by means of soda solution, is first distilled alone, so as to get rid of most of the water and H_2S. It is then re-distilled in a perfectly dry retort with 1 to 2 per cent. of anhydrous cupric sulphate, collecting the distillate in 5 or 6 flasks. Most of the distillate will crystallize at 16° C., though it is generally necessary to drop in a fragment of the solid.

If *much* H_2S is present, it should be removed by boiling, or by leaving the liquid in an open vessel, over night, previous to distilling with the sulphate.

Dalta Square, Lancaster, September 25th.—Lond. Chem. News, Oct. 11, 1867.

ON PLATINIZING METALS.

By Prof. A. H. Church, M.A., F.C.S.,
Of the Royal Agricultural College, Cirencester.

Let us begin with platinum, one of the least known of the "precious" metals. Precious it is for several reasons. Not that it is very beautiful in color and lustre, for although it may be obtained nearly as white as silver, its appearance usually resembles that of pewter very closely; yet time and experiment have shown that it has most valuable properties. It never tarnishes; no ordinary flame, or fire, or furnace will melt it; most strong acids and many chemical salts do not dissolve or injure it; and, when you do get it to dissolve, its solution forms a most useful chemical test, or "reagent," as it is called. Since the year 1741, when platinum was first brought to Europe, under the name of platina, or "little silver," it has been employed for many different purposes. As it could not be worked like ordinary metals, the Russians, who made coins of it, adopting the plan invented by the English chemist, Wollaston, submitted the powder of platinum, as obtained by the chemical treatment of the ore, to powerful pressure, and to repeated blows, and also to the influence of a very high temperature. By this process the powder or fine particles of the metal may be made to cohere into an uniform solid mass. It is thus that platinum is fashioned into crucibles for chemists, stills for the purification of sulphuric acid, foil, leaf, and wire for various useful purposes. But we really must not dwell further upon these interesting facts in the history of platinum, for our intention is to describe something newer and less known. We purpose giving the details of a very simple and beautiful process for covering other metals with a delicate film of metallic platinum, and so at once varying their appearance, and endowing them with one of the virtues of this metal, namely, incorrodibility.

We have before mentioned that although platinum does not easily dissolve in acids, it can be induced to dissolve by appropriate treatment. If a few grains of scrap platinum, which may be purchased at the rate of about twenty shillings the ounce, be warmed in a flask with a mixture of three parts of hydrochloric (muriatic) acid and one part of nitric acid (aqua regia), it will soon begin to disappear, dissolving in the acids with a red-brown color, not unlike that of dark sherry. This liquid contains a compound of the metal platinum with the non-metallic element chlorine. This compound is generally called bichloride of platinum. It may be obtained in the solid form by drying up, at a gentle heat, the acid solution of the platinum scrap. This salt, or compound of platinum, may be thus prepared—40 grains of the metal yielding about 68 grains of the bichloride ; or it may be purchased at a very moderate price. It cannot, however, be used directly and without any further treatment for the purpose we have in view, namely, the plating (or, rather, platinizing) of various metals. The following directions will serve for the preparation of a suitable solution for this purpose:

Dissolve, in ounce of distilled water, 60 grains of bichloride of platinum and 60 grains of pure honey. Add to the above solution three-quarters of an ounce of spirit of wine, and one-quarter of an ounce of ether. The mixed liquids, if not quite clear, must be filtered through a piece of white blotting paper. The objects to be platinized, which may be of iron, steel, copper, bronze, or brass, are to be thoroughly cleansed by washing them in soda, then in water. When they have been dried, they require heating over a lamp, to a heat below redness. For this purpose they may be suspended, by means of a fine wire, over a spirit or an oil lamp, in such a way as not to touch the flame. Suddenly, before they have had time to cool, the objects are to be completely plunged beneath the surface of the platinizing liquid. One immersion for a single minute generally suffices; but the process may be repeated if necessary, care being taken to wash and dry the pieces operated upon before re-heating them. The composition of the solution may vary considerably, and yet good results be obtained. Sometimes the addition of more honey improves it; sometimes the proportion of bichloride of platinum may be increased or diminished with advantage. Indeed, it will be found that the appearance of the platinum film deposited upon the objects may be altered by changing the proportion of the bichloride present. The solution may be used several times; gradually, however, it loses all its platinum, the place of this element being taken by the iron or copper dissolved off the immersed objects.

We may now appropriately mention a few examples where this platinizing process seems to furnish desirable results. Articles made of iron or steel—watch-chains, steels, sword-handles, keys, and similar useful or ornamental objects—are greatly improved in appearance, and, moreover, preserved from all chance of rusting, by this treatment. The color of the platinum film is of a neutral greyish black, and it often shows at the same time a faint iridescence. Iron or steel which has been inlaid with gold or silver, forming what is known as damascened work, is greatly improved by platinizing. Neither the gold nor the silver are in the least degree affected, and they will be found to afford a better contrast with the color of the platinized than with that of the original iron. Other artistic applications of this process will readily suggest themselves: coins, medals, chains, and ornaments of brass and copper may be instanced as excellent subjects for experiment. If they have been partially gilt or silvered before treatment with the platinizing liquid, those parts only of the specimen which show the original metal will change in color. In this way very beautiful and effective designs of gold on platinum, or silver on platinum, may be formed, while in the case of gold, at all events, the groundwork metal of copper or brass would scarcely have shown an appreciable contrast of color.—*London Chemist and Druggist*, May 15, 1867, from the *Intellectual Observer* of April.

ON ATTAR OF ROSE.

By Dr. R. Baur of Constantinople.

Translated and abridged from the *Neues Jahrbuch für pharmacie*, Bd. xxvii, Heft 1. (Januar 1867), by Daniel Hanbury.

Attar of Rose or Rose Oil is the volatile oil obtained on the southern slopes of the Balkan by distilling the flowers of *Rosa damascena.* It is called in Turkish *Güljag* (*Gül*, rose; *jag*, oil).* The word *Attar* the author had never heard used, nor was he able through the help of his Turkish friends to gain any information about it.†

The region in which the distillation of roses for the sake of attar was first commenced is, according to some, India, according to others, Persia or Arabia, while othors again refer it to Macedonia or Bulgaria. The author confirms that of which many pharmacologists by profession have long been perfectly aware, that commerce at the present day knows of but one source for attar of rose worth naming, and that is the southern slopes of the Balkan.

The Balkan range extends along the Lower Danube from west to east, forming an imposing chain of vast mountains which in some places project as gently sloping hills into the Tunja valley and in others break off in rocky, impassable declivities. At the foot of one of the highest of these mountains and in the middle of a splendid valley through which flows the Tunja, lies the Bulgarian town of Kizanlik, the inhabitants of which are partly Turks and partly Bulgarians. This is the central point of the trade, and the first market from which proceeds attar of rose to all countries of the world. The extent of country over which the attar-producing villages are scattered is bounded by about 25° and 26° E. long. and 42° and 43° N. lat. The mountain chain which dominates this district consists chiefly of syenite, which by its detritus has produced a soil so fertile as to require but little assistance from man. The climate of the district is shown by the vegetation to differ but little from that of the Odenwald or the Black Forest. Wine is produced,—some of it excellent quality,—also silk in rather considerable quantity, etc., etc. The masses of gigantic and noble limes, oaks and chestnuts in the valley of the Tunja are remarkable. In the summer of 1862 the average temperature at noon was 82° Fahr.; in the evening 68°. Barometrical measurements in the same year exhibited a regularly recurring depression at midday of 20 millimetres.

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* This, it must be remembered, is the German way of representing the sound of the Turkish name. Mr. Redhouse, the author of a recent Turkish and English Dictionary, writes *ghyül* and *yàgh*.

† Yet *Attar* and *Otto* are well known to be equally derived from the Arabic *Itr* a word signifying *perfume, odor, scent;* and Attar of Rose is certainly called *Itr-yaghi* as well as *Ghùyul-yaghi.* D. H.

According to some authors, the rose which is used for making attar is *Rosa moschata*, according to others, *R. sempervirens*, *R. centifolia*, *R. provincialis*, or *R. damascena*. The author's opinion is that the original Kizanlik rose, which has been long in cultivation there, is a variety of *R. damascena*, and in this opinion he is supported by Professor Hugo v. Mohl. The Kizanlik rose is not remarkable for beauty, nor is its scent so intense as might perhaps be expected. Other roses, as *R. moschata* and *R. cinnamomea*, yield an essential oil rich in stearoptene, but of a disagreeable odor in comparison with that of the Kizanlik rose. The Kizanlik rose forms a bush of six feet high; its flowers which appear in May and June, are tolerably large, always half double, and stand several on a shoot, but never form a numerous tuft. In color they are bright red, rarely white, and then it is said less productive of attar. The rose is cultivated to form hedges and rarely manured. The odor of the flowers extends for miles.

The flowers upon expansion are collected before sunrise (often with the calyx), and such as are not required for immediate distillation are spread out in cellars, the work being so arranged that the flowers are subjected to distillation the same day they are gathered. Salting and similar processes are never resorted to. The distilling apparatus, which is erected in the neighborhood of some stream, is of simple description, consisting of a fire-place formed of bricks, on which is placed a tinned copper still. The still-head communicates with a refrigerator, which is simply a straight tin pipe passing obliquely through a tub fed with a supply of running water. The product of the distillation is received in a long-necked glass flask of the capacity of about 4½ *okes* (about 1¼ gallons). There are usually several such stills together.

All being in readiness and the roses for a day's distilling having been collected, the still is charged with about 10 okes (about 27 lb.) to which is added double their volume of water. The fire having been lighted, distillation is carried on in the usual manner for about an hour and a half, the result being simply very oily rose-water called in Turkish *Gül suju* (*ghyül-suyu.*) The still is then emptied, or rather the exhausted roses are removed from it and thrown away. The decoction which remains and which has a very agreeable rosy smell is used instead of fresh water for a new distillation. The first distillates from each apparatus are united and subjected to distillation by themselves, one-sixth being drawn off; and the residue is used in the place of spring water for other operations. The vessels containing the rose water and completely filled with it are now kept for a day or two at a temperature exceeding at least 59° Fahr., at the end of which time most of the oil, bright and fluid, will have risen to the surface. By means of a very small tin funnel, having a fine opening and provided with a long handle, the oil is skimmed off and is then in condition for sale. The rose water last drawn is of extreme fragrance, is reserved for culinary and medicinal purposes and is much prized. The resin of the calyx, which adheres to the knives and hands of those who cut the flowers, is collected and prized as a perfume under the somewhat inappropriate name of *Gül shamur* (*Rose dirt.*)

As regards the product of volatile oil, it is evidently extremely variable. The author thinks that the average percentage may be given as 0·04, though he cannot support the exactness of his estimate as some who profess to have counted the roses one by one. The annual produce of a harvest is from 300,000 to 400,000 *meticals*, or in round numbers from 3000 to 4000 pounds, a quantity which represents seven millions of pounds of roses and sets in motion a few thousands of stills. Returns which like that of last season (1866) reach 600,000 meticals are exceptional.

As might be expected with so costly a production, the harvest and its results are dependent on a variety of influences. Of these the situation of the rose-garden is one of the most important, and it is doubtless the fact that the most productive are those occupying the southern and south-eastern slopes of the range. Plantations lying higher generally yield less attar and that of a quality that congeals more readily.

The nature of the soil has an influence in so far as that when it is poor in humus and but seldom manured, the roses afford but little oil, and that more congealable or, in other words, richer in stearoptene. Currents of air, warmth and light exerts an influence inasmuch as that if the rosebuds develope slowly by reason of cool damp weather, and are not strongly exposed to the solar rays when about to be collected, a rich yield of attar of low solidifying point is the result. But if at the time of gathering or shortly previous, the sky is clear and the temperature high, the quantity produced is diminished and the oil is more easily congealable.* The difference in the congealing point may certainly be taken at 2° R. (= 4·5° Fahr.).

The water used for distilling is at first (as stated previously) spring water, and afterwards the waste rose water. The use of hard spring water manifests an influence not only in the quantity but also in the quality of the oil yielded, as compared with that of river water or pure rose water. The author has himself conducted distillations on the Balkan according to the above conditions, on which occasions when the operation was performed with spring water an oil rich in stearoptene, but less transparent and fragrant, was obtained-

As to attar of rose itself, the result of this distillation, the author confines himself in the present paper to that which relates to the production, falsification and examination of the drug, reserving the subject from a chemical point of view for a future communication. Pure attar of rose, carefully distilled, is at first colorless, but speedily becomes yellowish. Its sp. gr. at 18° R. (72·5° Fahr.) is 0·87 ; its boiling point 229° C. (444° Fahr.). It consists of an elæoptene and a stearoptene, the former the source of the odor, the latter of the property of congealing into a solid form.

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* This fact is remarkable. In distilling roses in London I have noticed that it is when the roses have been collected on fine, dry days, that the rose water has most volatile oil floating upon it; when the roses have been gathered in cool, rainy weather, but little or no volatile oil separates. The attar of English roses has an odor by no means very agreeable; it contains a large proportion of stearoptene and does not become fluid at a temperature much below 90 Fahr.—D. H.

Pure attar of rose, once distilled, solidifies at a temperature of from 11° to 16° C. (51·8° to 60·8° Fahr.) or still higher. It is soluble among other things in absolute alcohol and in acetic acid. Its odor is rose-like with a peculiar honey-like sweetness, agreeable only when highly diluted.* The most usual, and by long practice also the most certain criteria of the purity of attar of rose, are

1. The temperature which it congeals.
2. Its manner of crystallizing.
3. Its odor.

In that which concerns the estimation of attar according to its richness in stearoptene, great caution and attentive observation are requisite. As the stearoptene in a pure state is completely inodorous, an examination as to its presence is properly of no real value, for the less congealable the oil (*i. e.* the freer from stearoptene), the stronger and more agreeable in its odor. Attar of rose is used only as a perfume ; moreover it contains a body which being itself devoid of odor, weakens the intensity of the odorous principle, thus diminishing (taking an economical view) the value of the attar as a perfume. But it is not so judged in commerce. In Kizanlik, as at all other places, attar is up to the present time bought and sold chiefly according to the temperature at which it solidifies,—in other words according to the proportion which it contains of *inodorous camphor* or *attar-of-rose-stearoptene.* Why is this ? The answer is simple. The stearoptene is to a certain extent one of the constant constituents of attar of rose, and an indicater of its purity. If rose-oil be augmented by fradulent additions, its congealing point will be thereby diminished, and it will be necessary to increase its crystallizing tendency by the addition of some substance possessing properties like those of the natural stearoptene. But any such body which is not at once recognizable even by a person of small experience does not (to the author's knowledge) exist.

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* This is entirely a matter of taste. To many persons the odor of the undiluted attar is extremely delicious.—D. H.

Almost the only substance at present known with which rose-oil-stearoptene can be replaced, or in other words which can be employed to conceal the addition of another essential oil and consequent reduced proportion of stearoptene, is *spermaceti.* This, however, effects the purpose in but a clumsy manner, for it soon separates, settling down as a solid cake, and forming none of the long, light, peculiar crystals which characterize the true stearoptene. It also exhibits, upon shaking, a peculiar iridescent, muddy looking appearance [*irisirende Schlierenbildung*]. The crystals [when separated] melt at 122° Fahr. and leave on paper a strong stain of grease. If a sample of attar, suspected to be adulterated with spermaceti, is placed when near the temperature of congelation in a centrifugal machine, the spermaceti if present, will in a few minutes be driven to the bottom of the bottle in which the sample is contained: this adulteration is thus easily recognized. Pure rose-oil-stearoptene fuses at 33° C. (91·4° Fahr.), volatilizes completely from paper on careful warming, is specifically lighter than the elæoptene and much lighter than spermaceti. It is inactive to polarized light.

Other adulterations, as for instance with margaric acid, are difficult. Although the substitution of other substances for the true stearoptene is easily detected, the author has had occasion in many instances to suspect adulteration, and often when the *corpus delicti* has been regarded by connoisseures and chemists as unquestionably spermaceti, he has proved it, on closer examination, to be merely the stearoptene of the attar.

If the admixture of spermaceti is proved, there is still the question of adulteration with essential oil, and this is in fact much more frequent, and alas! of much more difficult recognition.

The admixture in question relates entirely to the so-called Geranium- or Palmarosa-Oil. That oil of rhodium and oil of sandalwood are mixed with attar, as stated in many handbooks of Materia Medica, or that such a mixture can be substituted for pure rose-oil is for any person who has once in his life smelt these oils, simply an impossibility.* It is equally erroneous to suppose that the true ethereal oil of a geranium (as that of *Pelargonium odoratissimum*) is used for mixing with attar, and this is certainly not the plant whence the so-called *Oil of Geranium* used in turkey is derived.†

The Turkish Geranium oil (in Turkish called *enterschah*‡) is according to the most credible accounts, derived from a grass of the genus *Andropogon*, from which it is distilled in the months of December and January in the neighborhood of Delhi. It comes to Turkey by way of Arabia, and is sold here by Arabs in large bladder-shaped vessels of tinned copper holding about 120 lb. each. When recent it is tolerably limpid, bright yellow to brownish, oftened colored green through containing copper, and very frequently,—indeed mostly,—contaminated by the addition of a fatty oil. In purchasing care must be taken to avoid that which contains much fixed oil, or which is mixed with some other essential oil. An experienced nose and a bit of cigarrette paper are all the re-agents requisite for determining these additions.

The Geranium oil as it arrives is, however, by no means in a proper condition for mixing with attar. Its odor and color must as far as possible be assimilated to those of rose oil, and to this end it has to be refined. By this process it loses its penetrating after-smell, and according to the goodness of the sample treated, acquires sooner or later a pale, clear yellow color. It also loses the property which it possesses in the unrefined state, of acquiring a red color (separation of Cu_2O) upon long standing. The purifying process is thus conducted: the crude oil is shaken repeatedly with water acidulated with lemon juice, from which it is poured off after standing one day. The washed oil is then placed in shallow saucers exposed as much as possible to the sun and air, whereby it gradually loses its objectionable odor. The spring and early summer are the seasons most suitable for this operation, the period required for it varying, according to the quality of the oil and the weather, from two to four weeks. Artificial bleaching agents could doubtless be used for depriving the oil of its color, but not for refining its odor. Those who have tried them have always returned to the old method of exposure to solar light; and though the resources of art may not have been exhausted, they have certainly not yet been successfully applied for the improvement of this oil.

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* The complete disappearance from commerce of true Rhodium Wood, is a sufficient reason why the essential oil which it contains is never now used for the adulteration of attar of rose.—D. H.

† This is perfectly correct. True Geranium Oil distilled in the neighborhood of Cannes from a variety of *Pelargonium Radula* Ait. is very distinct from the so-called Geranium oil of Turkey and of India, which are undoubtedly yielded by a grass of the genus *Andropogon*.—D. H.

‡ Is this a corruption of *Itri shahi*, a name applied, according to Redhouse's Dictionary, to the "*scented-leaved geranium*," as well as to the *Sweet Pea*?—D. H.

Refined Geranium oil constitutes a bright yellow, somewhat viscid liquid, of an odor remotely suggestive of roses, and not over-strong; its sp. gr. varies according to the degree of insolation (resinification) from 0·88 to 0·92. When the oil is good and the refining process has been well conducted, a considerably larger quantity may be added to the attar without diminishing its disposition to congeal than when the oil is of inferior quality. To this the consistence or sp. gr. of an oil chiefly contributes, for the more geranium oil accords in sp. gr. with the attar with which it is mixed, the more fully does the latter retain its own peculiar qualities. If geranium oil be re-distilled, whereby it is rendered lighter, or if with the bleached oil, resin etc. is mixed so as to make it heavier and more viscid, the congealing power of attar with which either of such oils is mixed, is impaired. Geranium oil does not solidify at —20° C. (—4° Fahr.), but becomes at that temperature turbid and thick. Like attar, it takes up ozone from the air and shows an energetic reaction with iodine; it is easily soluble in ordinary spirit of wine, and affords like attar a well-crystallized compound with Ca Cl. It is quite inactive to a ray of polarized light.

Geranium oil is mixed with attar in almost any proportion, from a few parts per cent. up to 80 or 90. The differences in congealing point are not quite in proportion to the relative volumes of the two oils which are mixed, apart from the variable properties of each; and to calculate the amount of mixture that is required to suit a particular market, one has always to make some preliminary trials as to the congealing point. Thus it will be seen that the business of adulterating attar is somewhat troublesome, but honest dealing out of the question, it is very profitable.

Many attempts have been made to discover some chemical reaction which would reveal the falsification of attar with geranium oil, but hitherto mostly in vain. As completely deceptive may be noticed Guibourt's test with the vapor of iodine; and also that with K I and starch. The author has had the opportunity of preparing a standard attar of rose on the spot and was also in a position, such as scarcely another chemist ever was, for investigating the whole subject. Pure attar gives with iodine and with iodide of potassium and starch the same reactions as when it is mixed with geranium oil, and even those with pure geranium oil are hardly different. The proposed test of NO_5, NO_4 and SO_3 are equally devoid of value.

Among reactions such as these there is not one of real importance for the recognition and determination of geranium oil when mixed with attar. The author has learnt to distinguish but one constant character for geranium oil, which is that of not diverting a ray of polarized light; whilst attar in a tube of 100 mm. rotates the ray 4° to the right. Here is the single handle for the examination of a suspected attar. Considerable difficulties are certainly in the way of using such a test. The differences observable are very small, and the test is in fact applicable only in the case of very gross adulteration. In the use of a longer tube (say about 200 mm.) there are difficulties from the color of the oil and its want of transparency. The author has recently made trials of another form of polarizing apparatus constructed expressly for the purpose, which has enabled him to detect in attar of rose so small an addition of geranium oil as 5 per cent.; but such an apparatus is somewhat expensive, and much practice is required in order to use it effectively.*

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* The difficulties of employing polarized light for the discrimination of attar are, in my opinion, too considerable for the test to be at present of any practical value. I may refer to some experiments on the subject made in 1857 by my friend Dr. De Vry, the results of which by no means accord with those obtained by Dr. Baur.—D. H.

The author considers that an attar of rose which at a temperature of 12·5°C. (54·5° Fahr.) in a thin glass tube does not congeal well in the space of five minutes, and which has not moreover a dextrogyre rotatory power of 4°, should be returned to the seller, no matter how fine may be its odor. That there are attars which solidify at 10° C. (50° Fahr.) and yet are genuine (owing, for instance, to faultily conducted or to repeated distillation) is just as true as that there are those which do the same at 20° to 25°. C. (68° to 77° Fahr.) and are yet of indubitable goodness. But these are exceptional, as in the case of opium, certain indubitable pure samples of which have yielded respectively 2 and 16 per cent. of morphia.

To obtain attar of rose as far as possible free from adulteration, the author recommends that purchasers should address themselves to well-known and respectable firms, who possess whatever facilities exist for obtaining a genuine product; yet with all this, no firm would probably be willing to give an absolute guarantee in respect to such an article.*

There is still one other kind of adulteration, though it has actually no importance and is only mentioned here for the sake of completeness. It is the addition of alcohol. Attar of rose, as such, does not dissolve in alcohol of 85 per cent. (sp. gr. ·835) or rather the elæoptene dissolves while the stearoptene separates. On mixing the two liquids one obtains a magma of little crystals. On the other hand it dissolves readily in absolute alcohol which might well be used for the purpose of adulteration, were not its odor immediately perceptible even to the uninitiated. For such a falsification, which, however, I never knew to occur in commerce, a salt of rosaniline may, according to Puscher, be employed as a test.* The addition of acetic acid or of fatty oil is of course of easy recognition.

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* To this excellent recommendation should be added another, namely, that purchasers should be willing to pay a remunerative price for a good drug. Some years ago a quantity of attar of rose was consigned to a house in London, with directions that it should not be sold unless at a certain high price, but that if no purchaser could be found for it, a certain proportion (20 or 30 per cent. I believe) of another essential oil which accompanied it should be mixed with it, and that it should then be offered for sale as best attar. I remember the circumstance and had samples of each of the essential oils: that which was to be used for diluting the attar was the so-called Geranium Oil.—D. H.

The test of odor has been already mentioned. Of this criterion it is impossible to write, as it is an affair of much unprejudiced experience,—impossible without standard specimens for comparison, but with them often decisive. Dilution of the essential oil with an absolutely inodorous substance, as pure sugar of milk, affords a means for detecting more easily an after-smell (*Biegeruch*). One must also regard a certain sweetness which is quite foreign to the odor of geranium oil.

Attar of rose is exported in bottles,† or when required in large quantities, in what are called *cuncumas*, that is to say flat flasks of tinned copper, having a short and narrow neck. These vary in capacity from 1 to 10 pounds; they are sewed up in white cloth either at Kizanlik or, when necessary, at Constantinople, sealed, and provided with the Custom House ticket.

Among the bottles must be mentioned the long, angular little vials, usually of minute capacity, which travellers bring home as presents after a journey in the East. They hold perhaps about fifteen drops of oil, are tied over with bladder and red silk, and, what invests them with most value, are sold in the bazaar to the unwitting traveller at a high price. They often contain simply a few drops of geranium oil, the bladder being smeared with a touch of attar.

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* The test here referred to depends on the solubility of a salt of rosaniline (as the oxalate which is known as *Fuchsin*) in alcohol and comparative insolubility in an essential oil. If an essential oil contains even so little as one per cent. of alcohol, the admixture, it is stated, will be detected by the pink color produced on shaking the oil, with a few particles of the rosaniline salt. I have tried the test on the oils of lemon, lavender, anise, nutmeg, carraway, juniper, peppermint and rosemary, and have found them to acquire only a faint pink color. The Ceylon grass-oil called *Citronella* became deep pink, as did the Turkish so-called *Geranium Oil*. Another grass-oil, that of Verbena, a sample of which, distilled by Mr. Fisher of Singapore, I regard as of indubitable purity, was scarcely colored by the test. Two samples of good commercial Turkish attar became of a bright pink when the rosaniline salt was shaken with them. Rose Oil collected from English rose-water was entirely unaffected, as was a sample distilled at Grasse; another sample obtained from a manufacturer at Cannes acquired a considerable color when treated with the test. From the few experiments here detailed, I conclude that oxalate of rosaniline may possibly be a test for the purity of attar of rose, indicating, by the color produced, either the admixture of alcohol or of geranium oil. But experiments should be made on a *standard sample* of Turkish Rose Oil, which unfortunately I do not possess.—D. H.

† The cut and gilded glass bottles in which attar is so often imported are said to be of German manufacture.—D. H.

Having detailed the history of rose-oil from its distillation to its transport into commerce, but little further need be said. Although, as has been shown, it is the Balkin that produces the attar of commerce, a small exception must be made in favor of the districts of Grasse and Nice in Southern France and of Algeria, where also attar is distilled. But the quantity there produced is so small and the oil of far higher congealing point, and on that account of much less powerful odor, that it is vastly inferior to the oriental attar, and is mentioned in this place only as a curiosity. What has been written about the production of rose-oil at Brussa is simply untrue. At Adrianople even rose-distillation is no longer attempted.—*Lon. Pharm. Jour., Dec.* 1867.

NOTE ON A NEW KIND OF KAMALA.

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Kamala is the name of the small glands which densely cover the tricoccous fruit of *Mallotus phillippinensis*, Müller Argov. (De Candolle, 'Prodromus,' xv. 980), formerly known as *Rottlera tinctoria*, Roxburgh, and are simply brushed off from the ripe capsules. The same glands occur also in the thin tomentum of the under side of the leaves, and even on all parts of the male spike of the shrub; but in the latter place they are so little numerous and so scattered, that they are scarcely seen without the magnifying glass. All these glands are of an irregular spheroidal shape, but depressed and somewhat flattened on that side where they are fixed upon the capsules or leaves, while the opposite side is more regularly domed. If they are caused to roll under water or glycerine, the glands all ultimately show to the observer their flat side. In its centre we find a very short stalk-cell, from which a certain number of small clavate cells radiate in different directions, thus constituting the somewhat globular form of the gland, which is covered by a weak integument. The thicker ends of the small clavate cells within, appear at the outside as soft protuberances, upon which partly depends the irregularity of the nearly globular form of the glands. The radiate cells in question are arranged around the centre of the flat side to the number of from 9 to 30. If only the basal side is examined, they will be seen to be filled with a dark brown or brownish-red resin, the intermediate spaces and the outer membrane being of a light yellow color. The outline of that side, which is always turned to the observer, forms thus an undulated circle or ellipsis, the diameter of which varies from 70 to 120 micromillimetres (thousandth parts of a millimetre),—the heighth of the whole gland being always considerably less.

The kamala glands are always accompanied by a tolerable amount of characteristics, stellate, colorless or brownish hairs, belonging equally to the fruits of *Mallotus*, and some fragments of the latter and inorganic purities.

I had the opportunity for examining authentic specimens of the above plant from the Calcutta gardens, from which I am indebted to my friend Hanbury, and several others received from the late Mr. Zollinger, under the name *Rottlera affinis*, Hasskarl, *β. sumatrana*, a species now united with *Mallotus philippinensis* by the recent author of the *Euphorbiaceæ* in the 'Prodromus.' The glands of these plants I find to be certainly identical with commercial kamala, as hitherto furnished by English as well as by continental importers, and the mother plant must certainly be, as generally supposed, the said *Mallotus* or *Rottlera*.

The resins contained in kamala, to the amount of 78 per cent. have been examined, in 1855, by Anderson,* who stated, at the same time, that 3·8 per cent. of the weight of kamala are due to inorganic matters. I must confess that I never met with the drug of so great purity; all my samples yield at least three times that amount of ash. But for a long time past the kamala we have had on the Continent has been of bad quality, containing more than half its weight of sand and sesquioxide of iron.

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* Edinburgh New Phil. Journ. vol. i. p. 330; Pharm. Journ. and Transactions, vol. xvii. p. 407.

Students of Materia Medica being indebted to my friend Mr. Daniel Hanbury for some information about this valuable drug, I lately applied for a specimen to that gentleman, who presented me with an evidently fine sample, which recommended itself by a dark red and somewhat violet color, and being not dense. The color indeed is different from the brick-red hue we are accustomed to see in kamala as found hitherto in Europe, and the miscroscopic examination affords full evidence that this newly imported drug cannot be furnished by the same plant, although it may belong to one closely allied.

The general structure of the new kamala is the same as that of the common kind,—that is to say, it is formed of small resin-cells covered by a light yellow membrane. But their form is not globular; the glands are rather of cylindrical, or often nearly conical shape, so that they show, when seen under the microscope, the outlines of an elliptical or ovoid figure, and not a circle. Their longer diameter is of 170 to 200 micromillimetres, the shorter from 70 to 100. The smallest glands of the new sort are as large as the majority of those of the true kamala. Even that side of the former, by which they were fixed upon the fruit, is but a little flat, and only perceptible when the glands are allowed to swim or roll in a liquid. It is this side only which shows small resin-cells radiating from its centre, as in the common glands of *Rottlera;* but besides these, the whole arrangement of the other small cells is thoroughly different, and they are not of a clavate but of a simply subcylindrical form. The structure of the glands of the new drug may be explained by stating that they are divided into four or five transverse sections or stages, each of which contains a series of perhaps twenty small resin-cells, arranged in a parallel vertical order, very dissimilar from the radiate arrangement seen in common kamala, as will be distinctly observed if the drug is previously exhausted by alcohol or ether, and then crushed under glass, or completely washed by weak spirit and then examined under water. The empty resin-cells are ruptured at the boiling-point; the observer can count five, seven or ten of them in each of the three, four or five ranges or transverse divisions of the gland, if he adjusts the microscope exactly so that only the upper side of the gland occupies the field. The point of insertion of the gland is marked, though but rarely, in the very centre of the base, by a very small stalk-cell. The formation of common kamala has been well explained by Dr. Vogl, of Vienna, as occasioned by a successive *perpendicular* division of a mother cell; here we have a *transverse* horizontal division. There can be no doubt that the kamala in question must belong to another plant than *Mallotus philippinensis*, and I am glad to state that Dr. Müller (Argoviensis), the learned author of the *Euphorbiaceæ* in De Candolle's 'Prodromus,' is of the same opinion. In the genus *Mallotus* (formerly *Rottlera*) there are some other species besides *M. philippinensis* which bear colored fruit,—as for instance, *M. atrovirens*, *M. japonicus*, *M. Albus*. *M. oreophilus*, *M. ricinoides;* further researches are needful to make out to which of them our new drug may belong, if indeed it belongs to any one of them. Besides its peculiar form, structure, and dimensions, I have observed, moreover, that the new kamala is mixed with nearly colorless hairs, but that they are quite simple, not stellate or tufted as in common kamala. I will not mention other accidental fragments of the plant which accompany the glands; they may become of comparative utility in the determination of the plant from which the drug is derived.

Another fact of some interest is the curious behaviour of the new kamala at the temperature of 200° to 212° Fahr., when it takes an intense *black* color, losing only 5·6 per cent. of water. I presumed that this strange change might be due to the presence of an acid body, like a sulphate or sulphuric acid, but none such was found. Common kamala does not undergo any apparent alteration at the said temperature. The structure of the blackened kamala remains the same; it furnishes also the same tincture with spirit or alkaline liquids. The resins removed by alcohol, amount to 71·8 per cent. of the dried substance; the inorganic bodies (ash) to 12·9 per cent.

The alcoholic tincture, if allowed to evaporate very slowly, leaves microscopic crystals, which I suppose to be Anderson's *Rottlerine;* this sort of kamala seems to be well suited to furnish that interesting principle.

[*Note by Mr. Daniel Hanbury.*] In accordance with a suggestion of my friend Dr. Flückiger I have set on foot some inquiries as to the origin of the new kamala described in the foregoing paper.

Dr. Flückiger has so carefully described the characters of the drug that there is but little which I can add. I may, however, point out that the new kamala has a distinct odor, which is exactly that which is perceptible when a *tincture* of the old sort is poured into water. Apart from its dissimilar structure when seen under the microscope, the new kamala differs most obviously from the old in its darker color, larger grains and freedom from earthy impurities.—*London Pharm. Jour., Dec.* 1867.

TAMPICO JALAP.

By Charles Umney, F.C.S.

The attention of the pharmaceutist has recently been directed, in the various journals of pharmacy in this country, to a variety of jalap, rather abundant at the present time in the drug market, known as Tampico jalap; comparison has also been made between it and the officinal jalap (*Exogonium purga*) known commercially as Vera Cruz.

In a paper read at the Pharmaceutical Conference this year (Pharm. Journ., October, 1867), Mr. A. Southall gave the result of analysis of several samples of jalap of both varieties, the product of resin amounting, in some cases, to 33 per cent.

Messrs. T. and H. Smith remark (Pharm. Jour., November, 1867), that they have never succeeded in obtaining more than 15 per cent. of pure resin from any kind of jalap, neither have they ever seen a greater yield recorded.

They account for the discrepancy between their statements and that of Mr. Southall, by saying, that the resin as obtained by him could not have been in a state of purity and dryness. So far they are correct, but they have underrated the maximum yield of resin of jalap.

M. Guibourt, twenty-five years ago (Pharm. Jour., vol. ii., 336) recorded 17·65 per cent. of pure resin, obtained from an ordinary specimen of officinal jalap.

Having a quantity (56 lbs.) of fine selected Vera Cruz jalap in process for the production of resin when I saw their letter in the Journal, I determined to note accurately the quantity of resin, free from matter soluble in water, and in a dry and pulverulent state; this was $21\frac{1}{2}$ per cent., or $6\frac{1}{2}$ per cent. more than the maximum found by Mr. Smith.

Tampico jalap of the finest quality has not given me the fortunate results of Mr. Southall, for I have never obtained more than from 12 to 15 per cent. of resin; nevertheless, by selecting very heavy pieces, probably 2 or 3 per cent. more might be obtained.

It is quite possible to obtain 33 per cent. of alcoholic extractive, even when in a dry state; but this extractive is not wholly resin, for from it there can be easily separated, by means of water, 15 per cent. of saccharine matter, and the greater part in the state of grape sugar. This, doubtless, has been Mr. Southall's source of error; he has evidently taken the alcoholic extractive as pure resin, whereas the half is nothing more than sugar. This saccharine matter exists in the officinal jalap, but in a somewhat different proportion; four selected tubercles (very heavy) gave $20\frac{1}{2}$ per cent. of pure dry resin, associated with which, in the alcoholic extractive, was $9\frac{3}{4}$ per cent. of sugar. The sum of these two very nearly coincides with the 30 per cent. of Mr. Southall, as obtained by him from the Vera Cruz variety.

Thinking it likely that resina jalapæ was to be met with in an impure state in pharmacy, four samples were obtained in town from first-class sources (wholesale and retail); these upon examination proved that the suspicion was not unfounded.

No 1.	Resinous.	Translucent at edges.	Brittle.	Made from Vera Cruz.
" 2.	"	"	"	"
" 3.	"	"	15 p. c. moisture.	"
4.	78 p. c. resin, 15 p. c. sugar,	Very opaque.	7 p. c. moisture.	Tampico.

This substitution of Tampico for Vera Cruz jalap has doubtless been caused by the praise lately bestowed upon the former.

I cannot agree with Mr. Southall that both jalaps and their respective resins are equally active, inasmuch as the resin in Tampico jalap is present invariably in much smaller quantity, and is chemically different from the true resin of jalap, for it is almost wholly soluble in ether, whereas in the other only 12 per cent. is dissolved. This soluble portion is known as jalapic acid, the insoluble as jalapin* (this test affords a ready means of distinguishing it from other resins, such as guaiacum, scammony, etc.). Jalapin is known to the chemist as rhodeoretin, from the rose-red color produced by the action of oil of vitrol upon it, and in this reaction it is resembled by the Tampico resin, which seem similar to that obtained from the *Ipomœa orizabensis*, the male, fusiform, or stalky jalap of Guibourt, whose resins from this reaction was named para-rhodeoretin.

In odor, Tampico jalap much resembles peat fuel,—peat probably is used in the drying of the root; this peculiar smell is very characteristic; it clings to it even after it has been dried in a stove for a considerable time; in its powder it is easily recognized, and even its extract and resin retain the odor to a slight extent; but it is not impossible that this peculiarity is due to volatile oil, as a species of the Order *Convolvulaceæ* yields a volatile oil (Rhodoriza).

Since making the above experiments, Mr. D. Hanbury has kindly lent me a paper entitled, "Etude sur les Convolvulacées Purgatives," by M. Ambroise Andouard. The author states, that Tampico jalap is that described by the late M. Guibourt as "jalap digité majeur; analyses of some specimens indicate 5 per cent., the finest examined yielded 14 per cent. He fully coincides with the opinions of Guibourt, who says that Tampico jalap should not be used in the preparation of medicines, in which jalap is a constituent. He (the author) does not think that this jalap should be even classed with the false jalaps, such as the male or fusiform jalap, or the rose odor jalap. The resin he states is purgative, for he himself has tested its efficacy in a few cases; his opinions are also confirmed by other experimenters; but he considers this jalap as an inferior kind. In concluding his essay, M. Andouard says, that the jalaps of pharmacy are reduced to two,—the tuberous and the fusiform; the Tampico is an inferior kind, and should only be used in the state of resin; and that it is necessary for the pharmaceutist to know when to use the one and the other.

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* A large proportion of jalapin used in this country is supplied by the German market,—and is nothing more than the decolorized resin of either Tampico or the fusiform or male jalap.

Pharmacologists cannot agree as to the plant that yields this variety. Guibourt queried whether it was not the *Ipomœa mestitlanica*, which, according Choisy, is a Mexican product, known as "purga." This however is doubtful.

The majority of pharmaceutists, I am persuaded, will not think themselves warranted, but will decide that it is improper, to substitute in any preparation the Tampico for the true jalap, which has been so highly esteemed for more than two centuries, and whose efficacy and certainty of action is beyond the slightest doubt.

40, *Aldersgate Street, E.C.*

Lon. Pharm. Jour., Dec. 1867.

LOFODEN NORWEGIAN COD-LIVER OIL.

By Robert Howden.

The information in this paper relating to Lofoden cod-liver oil is supplied on the authority of four gentlemen in Norway,—Captain H. Olsen, of the Royal Navy, Commanding Officer of the Government Surveillance at Lofoden; Captain Heyerdahl, of the Royal Navy, engaged on the same station; Mr. Möller, a pharmaceutist, of Christiania, who has devoted many years of a long life to the subject, and Mr. Sharp, an English merchant at Christiania. To the latter gentleman, my friend Mr. Sharp, I am under particular obligation, for he not only translated a series of questions prepared for the purpose into the Norweigan language, but placed himself in direct communication with those gentlemen whom he considered, by their official position or personal experience, able to supply accurate and intelligent information. He further translated their replies into English, thereby furnishing the basis of the present communication.

Every year, early in the month of January, the cod-fish begin their great migration from the deep sea. Moving in a north-easterly direction, they approach the coast of Norway and concentrate themselves upon the Lofoden Islands, entering the estuaries by the Westfjord. These islands are situated near the northern extremity of Norway, about 150 miles within the Arctic Circle. The Westfjord is a sheltered bay extending for thirty miles between the islands and the continent.

The cause of this great migration of the cod is probably due to the instinct of propagation. The roe is specifically lighter than sea-water and floats upon it, hence the fish seek those shallow and more quiet waters where their ova may be securely hatched, protected equally from the strong northerly winds of the glacial regions and from the impetuous currents and waves of the Atlantic by the lofty wind-guards and natural breakwaters they find in the Lofoden Islands. In this favorable locality, after the roe is hatched, they leave their young fry.

Immediately on the appearance of the immense shoals of cod at Lofoden, a remarkable result ensues,—all other kinds of fish disappear with one consent. The exact cause of this curious phenomenon is not yet understood, but literally it is the fact that the very herrings used as bait can no longer be taken in those waters, but have to be imported from a distance, and are sold to the fishermen as articles of trade. Two important consequences attend this singular circumstance; one, that the fecundated roe, secure from the predatory attacks of many voracious enemies, has a favorable opportunity for development, whereby a large supply of this valuable fish is maintained; the second, that no other fish than cod can be taken in the nets, and consequently, no other livers than those of the cod can be employed in the preparation of the oil.

As soon as the cod are known to have arrived, the fishing begins without delay. But during the month of January, the results are neither large nor important, as those engaged at first are only agricultural laborers and peasants living near the coasts. Fisherman by vocation, many of whom come from considerable distances, begin to arrive towards the end of the month, when the great fishing commences; the exact date slightly varies in different years, but it may be approximately given as the first week in February. The total number of men then assembled is estimated at 25,000. The quantities of cod are prodigious, their numbers incalculable; a good or a bad season does not depend on the variable supply of fish,—that is apparently always the same, and beyond computation,—but upon the weather, as every rough day prevents the open boats putting out to sea, occasions a serious loss to the whole fishery.

Three different methods are employed in the capture of the cod; the deep line, the long line and nets. When caught in nets, the fish are, with few exceptions, dead on being drawn out of the water; this is generally the case also with the long line, especially if stormy weather has delayed the fishermen in taking it up; with the deep line the fish are all secured alive. They are never killed, but left to die of themselves, which they do during their transit to the shore; so that a catch of fish is always brought on land dead, by whatever method it may have been taken.

In Lofoden, the common and almost only bate is the herring, *Clupea harengus;* as herrings must be purchased, it sometimes happens that worms, mussels, or the cod-roe are employed. The fisherman who are obliged to use these obtain far less fish than those who can afford herrings, as the cod being assembled for the purpose of breeding, are not very much inclined to feed. The best bait of all, and the favorite food of the cod, is the capelin; but by a very old Norwegian law, made long before the principles of commercial liberty were understood and practiced, its use is prohibited at Lofoden because being obtained with difficulty, and only by few persons, the fortunate fishermen who had any, not only caught fish as fast as they could take them from the water, but gave the cod a disgust for all other kinds of bait, to the prejudice of their indignant neighbors.

Every afternoon, at a given signal from the surveillance, those fishermen having nets or long lines, row out one or two sea miles to their fishing-grounds, set their tackle, then row back and pass the night on shore. Next morning, the signal being again given, they all row as before, take their catch and return with it during the forenoon. The fishermen with deep lines remain all day at sea, leaving very early and returning in the evening; the distance these have to row is from four to seven English miles.

As soon as the fishermen has come to shore, he proceeds to cut the head off every fish and takes out the roe and liver, thus distributing his catch into four groups. The fish is sold on the spot to purchasers or dealers, who are there for the purpose, or else the fisherman hangs it up to dry for himself, and later in the season, removes with it to the "stœvnetid," the home-time, meeting-time at Bergen. The roe he usually salts immediately.

The livers are disposed of in the following manner:—some he throws at once into large wooden vessels, holding from eight to twelve hogsheads, and, by frequent agitation and stirring with wooden beaters, obtains from them, at the ordinary temperature, a fine transparent oil, which floats on the surface. This oil is drawn off and preserved separately. The livers thus partially exhausted are then either secured in barrels for the further purpose of oil burning at home, or else, being left in the open wooded vessels, suffer decomposition; the oil produced becomes gradually darker, bubbles multiply, gaseous products are freely disengaged, accompanied with an exceedingly unpleasant, penetrating smell that may be perceived at a great distance. The livers that are not thus treated, the fishermen pack into barrels bought for the purpose. Day by day the livers produced by the day's fishing are put into a barrel until it is quite full; it is then bunged and a new barrel begun. When the fishing is ended, every one takes the number of barrels belonging to him and journeys homeward. The best livers and the finest oil are taken from those fish that have just arrived from the deep sea, the cod is then fattest and in best condition; but by remaining in shallow water, where the function of spawning is accomplished, where feeding is not its object, and where little food is to be obtained, it becomes leaner and leaner, until, on its return to the deep sea, it is quite emaciated.

Cod-fishing at Lofoden terminates on the 14th of April. All the contracts for service expire on that day, according to ancient custom; even though the fishing may be productive with a prospect of continuous good results, the men disperse notwithstanding, and their labors are discontinued. The reverence that the northern races have for the festival of Easter is the original cause for this usage, together with the ardent desire felt by every individual to pass the holidays following that religious anniversary, preceding as they do the joyful spring time and much-longed-for summer, in his own home. Quite recently some employers have tried to make contracts with their men to continue the fishing beyond the 14th of April, if fish were abundant; this, however, is at present an exceptional stipulation and by no means the custom.

On arriving at their several huts and villages the preparation of the oil is proceeded with, and generally completed by the end of May. While the barrels of liver remain at Lofoden, and still more during the journey afterwards, much of the cellular tissues becomes disintegrated, and the oil flows out; so soon as the barrels are opened, the oil is carefully poured off and kept apart, and this, together with that made at Lofoden in the open wooden vessels, is the *light yellow oil.* The livers having been partially exhausted are then thrown into iron kettles hung over an open fire, the water contained by the livers being allowed to evaporate; the oil is poured off as fast as it becomes disengaged by the warmth, and is put into barrels. This is *brown oil.* Increased heat above 212° Fahr. is now applied, so that drops of rain, (for the operation is always carried on in the open air,) falling into the kettle are instantly converted into steam with a slight explosion; the color deepens; as the temperature increases the oil gradually grows darker, till at last, when what remains of the livers floats about as hard dark lumps in oil that is almost black, the process is considered to be finished, and the remaining product is the *dark tanner's oil.*

In Sweden, Denmark, and even in Norway itself, as well as in other places, there is a prejudice in favor of the brown oil. It is regarded by many as superior in its remedial properties to the light yellow oil. But as the light yellow oil is an exudation at a low temperature from the liver at its freshest period, and has certainly less flavor and odor than any other kind, it does not appear that this preference is well founded.

It is apparent that a variable and sometimes long interval takes place between the removal of the liver from the fish and the separation of the oil. Livers taken in January may not be treated for their oil till April, and even if taken at the end of the season the interval may be considerable, depending upon the distance of the fisherman's home, on Easter-tide, and also upon the supply of kettles, for few fishermen own these utensils, but borrow of one another. When the boiling is begun, no difference is made between livers taken early or late, but all are treated alike. Thus the first livers that may be presumed to be the best will be the stalest, and the late and poor livers the freshest. The average time that elapses between the death of the fish and the separation of much of the oil, may be said to be from one and a half to four months.

Oil is never sold at Lofoden during the fishing season, but in May and June the fishers take their several products to Bergen, which is the true market. They are unwilling to sell their livers on the fishing-grounds, though at advancing prices, preferring to make the oil themselves, even with less ultimate profit. The reason is peculiar; they are to a man desirous of being present at the great annual gathering at Bergen, for to be frequently absent from it lowers their reputation at home as men of the world; so a regard for their personal importance, together with the pleasures of social reunions, and the excitement of competitive trade are too great temptations for their natural prudence and thrift to resist. At Bergen, before the oil passes into the merchant's hands, it is classified, by brokers appointed by government, into three qualities, known as the light yellow, light brown, and brown. The average price of the light brown oil is from three shillings to three shillings and sixpence per gallon.

Although many of these particulars relate to the fisheries at Lofoden, it is proper to be understood that cod-fish are taken along the whole coast of Norway all the year round, and especially on the coast of Finmark during the months of April and May, when the Lofoden fishing is over. But in all these cases the cod are no longer alone; with them are many cognate and other species, who move all together in pursuit of common prey, or pursued by common enemies. Among these are herrings of several varieties, the capelin *Mallotus arcticus*, inferior sorts of cod, as *Gadus merlangus,* and many other small fish. At Finmark the *Gadus morrhua* and the *Gadus virens* arrive in about equal quantities, and of course are caught in the same nets. The *Gadus Carbonarius*, or coal-fish, also associate with the cod in great numbers, and are captured with them, as well as *Gadus molva* and *Gadus æglefinus*. In pursuit of these, and taken with them, are *Scymnus borealis, Squalus acanthias, Squalus spinax*, and *Selachus maximus*. These, with many other varieties frequenting the Norwegian coasts, have all of them livers yielding oil.

Now, remembering that some of the fishermen are agricultural laborers, and that all belong to the lower and least educated classes; also, that the livers are treated by them at their own huts without any kind of supervision; and that they are not only indifferent to but probably ignorant of the medicinal superiority of cod-liver over other livers; also that higher prices are realized at Bergen for one kind of oil than for another,—these things together may, without making any uncharitable imputations, possibly tempt these men to sell as true Lofoden oil the compound products of their several local fisheries. There is reason to believe that this is actually done; that the dealers in Bergen, who are as a class without pretension to scientific skill, buy without precaution and sell without scruple as Lofoden oil much that has never been at Lofoden, and has not been carefully made exclusively from cod-liver. Of the oils taken to market at Bergen, those prepared by the peasants are open to less objection than those prepared by the fishermen; for the laborers fish only during the season at Lofoden, where they can take cod-livers alone, and during the remainder of the year follow other kinds of labor along the long narrow fjords, which are entered by few fish.

These northern islands claim to be the only place in the world where the cod-fish, the true *Gadus morrhua*, is found in immense shoals, absolutely alone. Whether this be so or not is a question that, with our present limited knowledge of fisheries throughout the world, and especially of those at Newfoundland, may be left till more information has been accumulated; at present it is enough to know that Lofoden does possess this very remarkable advantage, and that the produce of its fisheries is a true cod-liver oil beyond doubt or suspicion.

Fully sensible of the great natural advantages possessed by these islands, Mr. Möller of Christiania, has been for many years desirous of introducing into general use a superior method of preparing the oil. Manufactories following his suggestions are in operation at Lofoden, Söndmöre, Christiansund and Finmark. About twelve years ago he endeavored to secure the results of his process by means of a patent, but without success. The government, however, recognized the superiority of his method as well as the value of his services to an important branch of national industry, and his Majesty the King of Norway and Sweden was pleased to confer upon him the Vasa Order.

The process he recommends may be thus described :—The livers are to be treated immediately on their arrival on shore, being less than one day old ; they are first to be carefully examined, and all poor, bruised, small, and diseased livers rejected ; all gall-bladders are to be watched for and removed ; the selected livers, all of large size, are to be washed in several waters for the purpose of removing blood, membrane, and all other impurities. They are then to be introduced into a machine which minces them into very small pieces, or rather reduces them into a paste. This paste is then to be transferred to an apparatus, heated externally by steam, and the mass cautiously warmed to 100° or 120° Fahr. ; at the same time it is to be diligently stirred and pressed with large wooden spoons, so that the oil may be liberated at the lowest possible temperature consistent with economic results. As fast as the oil separates, it is to be withdrawn ; and the stearine being first thrown down by exposure to a temperature under 40° Fahr., it is to be filtered. After filtration it is considered perfect, and may be put forthwith into barrels and bottles. The fresher the liver, and the lower the temperature, the clearer, lighter, and sweeter in taste will be the oil. Livers more than one day old require a higher degree of heat.

Three barrels of liver will yield one barrel of the finer oils, and a quarter of a barrel of dark oil ; but these proportions are only approximative, for the results will always vary according to the temperature employed in the process. The best oil made in this manner will cost from eight to nine shillings per gallon. It is never originally brown, but is liable by lying long in wooden casks to acquire a little more color.

The annual produce of cod-liver oil by the Lofoden fisheries is estimated at 25,000 barrels, each containing from 24 to 28 English gallons, and that of all the other fisheries on the coast of Norway at about 35,000 barrels more, making a total of 60,000 barrels. During the last two years, prices have not been sufficiently remunerative to encourage the preparation of the fine oil on a large scale; only two manufacturers at Lofoden have done so, and one of these, according to the chief of the surveillance, made only ten barrels this year.

The prices formerly obtained by the fishermen at Lofoden for their livers were from six to seven specie-dollars per barrel, equal to 27*s.* to 31*s.* 6*d.* English; now they are from nine to ten specie-dollars, equal to 40*s.* 6*d.* to 45*s.* English.

Such is the information supplied to us from Norway; for our convenience it may be briefly grouped as follows, under five heads:—

1. Genuine Lofoden oil is true cod-liver oil made from the *Gadus morrhua.*
2. The light yellow oil is not inferior to the light brown oil.
3. Oil sold at Bergen is not necessarily Lofoden oil, or even pure cod-liver oil, although so called.
4. The relative absence of color, odor, and taste are guarantees that the process of separation has been properly conducted at a low temperature.
5. The annual supply of new cod-liver oil from Norway may be expected in the European markets during the month of July.

Cod-fish abound only in the cold and temperate seas of the northern hemisphere; they are found on all the coasts of north Europe, and upon the shores of the British Islands; it is probable they do not proceed much further in a southerly direction. One or two rare species have been noticed in the Mediteranean, but none have ever yet been described as inhabiting the great Pacific Ocean or the seas of India or the East. Their habitat is thus reduced to recognizable limits.

Thirty-six millions of fish are annually caught, dried and salted at Newfoundland, Iceland, Norway and Sweden; these, under the name of stock-fish, are exported to all parts of the world. Let it be allowed that half as many more are sent to market when fresh, this will give a total of 54,000,000, a num-that would appear to imperil the duration and very existence of the species. But the fecundity of this fish is so great that 9.000,000 of eggs have been found in the roe of one female. Hence, six female cod would, under favorable circumstances, supply to the whole human family, annually, their present demand for this important article of food. Cod-fish would soon fill the northern seas and become as multitudinous as the sands beneath them, if other and more effective agencies than those of man were not constantly at work to keep their numbers in subjection.

The information now incidentally given relating to the propagation of the cod, the deposit of its ova, and the security of the young fry is, though limited, an important addition to our knowledge of the natural habits of this fish; should further observations confirm the opinion held by practical men on the spot, then it will appear that Lofoden is the natural nursery for these immense shoals of cod that swarm the northern seas. Of course, cod ova may be deposited and hatched on many coasts, our own included, but nowhere on the same scale and with the same great results as at Lofoden. Collateral evidence in support of this view is furnished from Finmark, where, after the Lofoden season is over, cod-fish and the *Gadus virens* are found associating together in equal numbers. Now, the *Gadus virens* is the young of the *Gadus carbonarius*, these being two names given to the same fish at different periods of growth; young cod presenting no marked characteristics whereby they essentially differ from the mature fish, have not a separate name; but the fact of these two species, the *Gadus morrhua* and *Gadus virens*, being found together in large shoals, and one of them young, renders it probable that the other is young also. Again, we know that the proper season of the year for the cod to spawn is the month of February; and this supports the view taken, that the chief object of the cod in visiting the Lofoden Islands in January is for the purpose of depositing their ova.

These things being so, we may advance to another proposition. Immense shoals of cod arriving from the deep sea make their annual appearance on the Norwegian coast early in January, and continue there to the end of April, when the last of them return. We are already in possession of the fact that at Newfoundland the shoals of cod arrive at the end of June and retire in October. By a comparison of these dates, it is apparent that their arrival first on one coast, then on the other, and their departure first from one coast, then from the other, are separated by exact intervals of six months. In both cases they come from and return to the deep sea, that is, the Atlantic Ocean. At Lofoden they arrive, and now alledged, for the purpose of spawning; at Newfoundland, certainly as fish of prey. At Lofoden, all other kinds of fish fly before them and are suffered to escape; at Newfoundland, they follow in fierce pursuit shoals of capelin, cuttlefish and herrings. At Lofoden, they arrive in their finest and best condition, leaving thin and emaciated; at Newfoundland they arrive hungry and ravenous, devouring their prey with the greatest voracity, till at last they become gorged and no longer able to feed; in this state, previous to their departure, they can be seen through the clear water to refuse their favorite food held before them as bait. From the great bank of Newfoundland to Lofoden flows that powerful equalizer of temperatures, that warm river in the sea, the great Gulf Stream. In its course, and about midway between Lofoden and Newfoundland, is the island of Iceland; cod leaving Lofoden in March to arrive at Newfoundland in June and July, might be excepted between these dates to appear on the fishing-grounds of this island; they actually do so, the chief cod-fishery in Iceland occurring in the spring and summer. Finally, cod approach Lofoden from the south-west; Newfoundland is due south-west of Lofoden.

Weighing these facts, a very interesting and important inquiry presents itself, whether these multitudes of fish, retiring as they do from one and appearing on the opposite side of a great ocean at definite and exact intervals, may not be composed of the same individuals moving in prodigious numbers and probably in detached shoals, urged by a powerful instinct to pursue systematic and periodical migrations,—to the East for the purpose of propagation, and to the West in pursuit of food.—*Lond. Pharm. Jour., Jan.*, 1868.

ON SYRUPUS CALCIS.

By Dr. E. R. Squibb.

In a communication Dr. Buckingham says:

"I enclose a letter from Dr. Squibb, of New York, which I received with some lime prepared with sugar. I trust that those who have undertaken to make the syrup and failed, will not be discouraged. I must caution against the use of the article in pill or dissolved in water, as it will produce nausea, or even a caustic effect. It should be given in milk. I have used it in doses as large as forty-five drops every two hours. Generally, thirty-drops every three hours have been sufficient. I have never found alkaline urine to follow its use, no matter how large nor how frequent the dose."

Brooklyn, March 16, 1867.

Dr. C. E. Buckingham, Boston.

Dear Sir,—Your paragraph, on the back of the reprint from the *Boston Medical and Surgical Journal*, came duly and has occupied me ever since, though it gave you little trouble to write. On the authority of the books generally, I did not know whether you or they were wrong, and to determine this had to go over the subject practically. I will not trouble you nor take up my time with any detail, but give you the results to use as you see proper. Sucrate of lime is a very definite thing chemically, and is soluble to any extent in solutions of sugar. To make it, it is only necessary to have lime, either caustic or hydrated, no matter which, associated with about three times its weight of sugar; but to render it soluble an additional proportion of sugar is necessary. The best proportion, practically arrived at, was one part caustic lime (or two parts hydrate or slaked lime), with eight parts of dry white sugar, rubbed together and poured into ten parts of boiling water, and boiled a few minutes; then diluted with forty or fifty parts of cold water and filtered through white paper, and the filtrate evaporated until the residue is quite brittle when cold. This is then rubbed to powder, and best given in a pill. The powder is, however, perfectly soluble in water, and if properly dried will contain between 8 and 10 per cent. of its weight of caustic lime. The powder may be dissolved in milk or any watery vehicle. A very good formula is to take of good clean well burned lime 400 grains, dry granulated white sugar 2300 grains. Triturate well together in a mortar, and then add the powder to f℥viii. of boiling water contained in a proper vessel (well tinned iron or bright copper answers), and boil the mixture with constant stirring for five minutes. Then dilute to two parts with cold water, and filter through white paper. Finally evaporate to whatever consistence may be desired. If the evaporation be carried on until the liquid measures a pint, each fluidounce will contain about 24 grains of caustic lime, and this is about as dense a syrup as can be conveniently dispensed. If carried to f℥xii. each fluidounce will contain about 32 grains of lime or 4 grains to the fluidrachm. But this syrup is too thick for convenient management in dispensing. If the evaporation be continued to dryness, great care must be taken to avoid discoloration and scorching as the fluid thickens and tends to bake on the bottom of the vessel. As it thickens it must be stirred continuously and kept from adhering to the vessel until all becomes translucent, tough and ropy. It finally becomes so tough as to be very difficult to stir properly, and when a small thread of it on cooling becomes very brittle and capable of being rubbed or crushed into small particles between the thumb and finger, the heating may be finished. When cold and brittle it should be rubbed to fine powder, and this powder, according to the extent to which the drying has been carried, will contain from 8 to 10 grains in the hundred of caustic lime.

The process is simple and easy, and requires so little skill and dexterity that any ordinary pharmaceutist of the most limited acquirements will be able to make it without difficulty.—*Med. and Surg. Reporter, Phila., Nov.* 9, 1867.

TRANSPARENCY OF MOLTEN METALS.

The assertion of Secchi, a few months ago, regarding the transparency of heated iron, has given rise to much talk; but we have not yet seen it confirmed by the statement of any other competent eye-witness. Meanwhile, however, many assertions have been made as to the transparency of metals when melted; and the evidence on this point begins to stagger the *savans.* It so happens, that, so far as we are aware, no professional chemist or educated physicist has yet testified to the phenomenon as actually observed by him. It is merely said in various quarters to be a fact, well known to the workmen employed in melting and moulding certain metals. We deem it, therefore, important to mention the first authentic endorsement which has come to our notice. M. Paul Morin, the accomplished chemist in charge of the Aluminium Bronze Works near Paris, asserts that the melted alloy, when poured into the mould, is transparent; and Mr. T. Sterry Hunt, to whom the assertion was made, and who saw the operation performed, assures us that the appearance of the molten stream seemed to corroborate the statement. There is a possibility of optical illusion in the inspection of a body which is itself intensely luminous, to discover whether it is transparent. We suggest that the question may be easily settled by the means employed to show the transparency of ordinary flame, namely, by burning magnesium, or in some other way producing a more brilliant light, behind it. The aluminium bronze is remarkable for two things, among other qualities, which distinguish it from ordinary alloys. One is the intense temperature developed by the union of the two metals, and the other is the extreme fluidity of the molten compound. Perhaps these qualities may be connected with the alledged phenomenon of transparency. Copper may also be transparent in the liquid state; but, in pouring it into moulds, it often oxidizes very rapidly; and the whole liquid mass is believed to be filled with disseminated particles of the red oxide of copper, which is opaque. Whether from this cause or not, we cannot say, but the evidence as to the transparency of molten copper, as likewise in the case of other metals, is still conflicting and inconclusive. *Chem. News, Nov.* 22, 1867, *from Amer. Jour. Min.*

HISTORICAL SKETCH OF THE DISMEMBERMENT OF PHARMACY FROM PHYSIC.*

By M. Donovan, M.R.I.A.,
Hon. Member of the Philadelphia College of Pharmacy.

The distribution of the healing art into the three several branches of Medicine, Surgery and Pharmacy has no foundation in nature, is artificial, and a comparatively modern invention.

That whoever undertook the treatment of the sick, not only devised the remedies, but prepared them for administration, is sufficiently probable; and that such a practice prevailed in the earliest ages of the healing art, in all countries the records of which have reached us, is placed beyond doubt by ancient testimony. Such were the duties of the Roman medicus, or of the Grecian *ιατρος*: such are the duties of the modern general practitioner; the general practitioner is therefore the most ancient as well as, in a certain sense, the most extensively useful representative of the medical profession. Until comparatively modern times the pure physician, as he is now called, had no existence, and it might be readily conceived, even were there no historical evidence of the fact, that the treatment of every morbid condition of the human body was undertaken by the same person.

But there is abundant proof that such a practice prevailed, not only in the earliest ages of the healing art, but at all times down to a comparatively modern period. We find ancient writers on the composition of medicines addressing the reader in the second person, and instructing him, not only how to prepare each remedy, but to employ it in the treatment of disease; indeed, there are very few of them who do not enter into the medical use of the articles described. We find that persons who sold simples to the multitude were taken into the employment of physicians, and gradually acquiring knowledge in this way, often ventured to do a little on their own account; and as there was no tribunal to test competence, they became general practitioners, like those who originally employed them. Pliny informs us that the physicians of his day, and of a period long before it, were little better than specious imposters. An indignant Roman, who had some experience of doctors, and wished to perpetuate his opinion of the skill of those who attended him during his last illness, directed the following inscription to be engraved on his tomb:

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* In compliance with the wishes of the Editor, that I should give a reference to the authorities from whom I quote, I have done so in the following communication.

"Turba medicorum perii."

That public shops were kept by physicians appears from several instances, but particularly from the fact stated by Cassius Hæmina (quoted by Pliny), that Archagathus, a Grecian physician, who settled at Rome B. C. 218, had a shop provided for him to receive his patients, bought at the expense of the city; this shop stood in the cross-street of Acilius. On his first arrival he was much employed, and his income was considerable. But having an unlucky predilection for cutting, cauterising, and amputating, and the Romans having a very great disrelish for this sort of practice, he soon lost his popularity, and was called the human butcher. This man's unpopularity brought the whole profession into disrepute at Rome. Plautus, who flourished two centuries before Christ, in his comedy called Mercator, puts into the mouth of one of his characters, "ibo ad medicum atque me ibi toxico morti dabo." This is an important sentence—"I will go to a physician, and *there* terminate my existence by poison." It appears that the physicians kept shops or magazines where medicines and poisons could be bought, and where it was not unusual for the patient to swallow the dose.

Scribonius Largus lived in the reigns of the Emperors Tiberius and Claudius, that is, in the middle of the first century of the Christian era. He was certainly a physician, although Dr. James calls him "a medicinal writer;" for, in his epistle to Caius Julius Callisto, he says, "Hippocrates conditor nostræ professionis," and a practising one also; for, speaking of the use of a certain remedy in many disorders, he says—"et ego magna ex parte expertus sum." That he compounded his own medicine appears from his own peroration, where he says, "harum compositionum *ipse composui* plurimas." And that he kept ready-prepared medicine for his patients, or officinal formulæ, appears from what he says of a particular medicine of which he thought highly, "quamobrem semper habeo id compositum."

Scribonius practised in the manner of other physicians. He tells us of one Pacchiochus Antiochus, a physician also, who had a secret remedy, originally invented by Appollonius, so profitable to him that he would never disclose its composition, although often solicited. Scribonius says, "*ipse* enim clausus *componebat*, nec uli suorum committebat. Plura enim quam recipit ipsemet contundi jubebat pigmenta fallendi suos causa." We therefore find this physician compounding his nostrum in secret, and purchasing and pounding more drugs than he employed, in order to deceive his own family. We also find an implied allusion to the servant whose province it was to powder the different articles, for in those days, as the present, pestles and mortars were used by the medical practitioners; they were made of Ephesian or Theban marble, but the best were made of a stone called Bassanites, it not suffering by abrasion, and therefore communicating nothing to the medicine. After the death of Pacchiocus Antiochus, his wonderful secret was disclosed by Tiberius Cæsar, by whose orders its composition was placed in the public libraries; its chief ingredients were colocynth, saffron, some herbs, spices, and gum-resins made into a confection with honey. Scribonius and Marcellus both give this history in the same words.

Galen, notwithstanding his extensive experience, and his high rank as a physician, conducted the business of pharmacy also at his own house. No doubt he kept a servant to do the heaviest part of the duty. After detailing the symptoms of his patients he frequently says—"I compounded for him the following medicine." Even some of the most disagreeable departments of pharmacy were transacted at his house. I need not refer to the disgusting details of his mode of procuring human fæces, which he used as remedies.

There was a physician named Cosmus, who, as Marcellus informs us, had amongst his secrets a wonderful collyrium, which cured all diseases of the eyes, and consisted of twenty-eight ingredients. From this it is plain that Cosmus must have compounded and sold it himself, or it could not have remained a secret. To have compounded twenty-eight ingredients into one collyrium seems to imply the possession of no small pharmaceutical skill, and we learn from the facts described that regular physicians compounded secret nostrums without incurring professional opprobrium.

The same author mentions that the physician Soranus, who is alluded to by other ancient writers also, settled in Aquitania, where he attended 200 persons laboring under mentagra, or some obstinate spreading disease of the skin of the face. Soranus used to apply a kind of ointment of cantharides to the part affected, having previously carefully bathed the face with an alkaline solution. These remedies were applied to the face by the physician himself, and this gives us some further insight into the nature of the medical practice of the time.

The foregoing facts, and many others that might be adduced, establish the fact that the physicians of ancient times practised medicine, surgery, and pharmacy; that they kept shops or repositories of medicine, with which they were always well provided: in short, that they were just the same as the general practitioners of the present day. Galen mentions that Cassius, a celebrated physician of Rome, kept a slave named Atimetus, for compounding a medicine of his invention.

We find that the same combination continued to obtain for several centuries after the period to which the foregoing observations apply; at least, in some countries, this was the case in the strictest sense, although, in others, there were some physicians who began to entrust their duties to persons who were very badly qualified for their performance. In Arabia, the combination of the three professions can be traced through a long series of ages. Serapion (the Arabian), who, in the eighth century, wrote a work on pharmacy, evidently addresses students in the practice of medicine when he teaches the art of compounding. He says, "For him who wishes to compound medicines as he ought, it is necessary that he understand their virtues profoundly," "therefore a knowledge of the degrees of the powers of medicines is the foundation on which he must depend in the cure of disease." "You require a recondite knowledge of simple medicines, so that by their aid you may be competent to compound, in all places, from the articles which you find."

Mesue, an eminent practitioner, and fourth in descent from Abdela, king of Damascus, writes in the same strain; and, while teaching pharmacy, evidently addresses medical students.

The same may be said of Avicenna, who wrote in the tenth century. Speaking of the Tyriaca Esdræ, he says, "et de *medicis* sunt quidam qui *ponunt* in ea de ammoniaco; et, de iis, sunt quibus illud non videtur quoniam ammoniacum nocet stomacho."

In order to render this matter more intelligible, it will be proper to give an account of the different classes of persons who, in addition to those already mentioned, had any connection with the collection or sale of medicines; and to endeavor to ascertain what were the real functions of those persons, and what was the extent of their connection with the healing art.

It will no doubt occur to many that the word apothecary is frequently found in the English translation of the Old Testament, and that his art is there referred to, thus leading to the great error of supposing that in these passages we have evidence of the separate practice of pharmacy at the period alluded to. In Exodus we find the following: "And thou shalt make it an oil of holy ointment, an ointment compounded after the art of the apothecary;" and "thou shalt make it a perfume, a confection after the art of the apothecary, tempered together, pure and holy;" and in 1st Samuel it is said—"And he will take your daughters to be confectionaries, and to be cooks, and to be bakers." The word "confectioner" here used is, in the original, the same as in the other passages translated by the word "apothecary." Now, one of the earliest forms of medicine was called a confection; there are compounds of the present day which have the same name in the pharmacopœias, and hence medicinal confections are nearly two thousand years old. Those who made and sold such compounds were, in later times, called "confectionarii." By the edict of Frederic I., in the beginning of the thirteenth century, the confectionarii were legally established in the southern parts of Italy, under an oath that they would always have in readiness fresh and adequate medicines, the price of which was regulated by the edict; and that they would prepare medicines exactly according to the prescriptions of physicians. Yet, Actuarius, a celebrated physician, who practised at Constantinople in the thirteenth century, in his work de medicam. comp., gave a list of medicines which might be substituted for others deemed of the same power (Mangeti Bibl.), and other tables of succedanea have since appeared. Besides these medicines compounded with honey or sugar, the confectionarii sold sweetmeats. They were also called apothecaries, along with some other traders who sold merchandise; for apothecary merely means a shop or magazine where any sort of merchandise is sold —and apothecarius is the proprietor of such. Thus, from the intermixture of the two trades, a confusion of names ensued; and it is on this account, no doubt, that we find in Scripture the same word one time translated "apothecary," and at another time confectioner. Even in the present time apothecaries sell what are called confections, and confectioners sell medicated lozenges. I have looked into a MS. Bible in the British Museum, supposed to be older than Wycliffe's, for the passages in which the word "apothecary" occurs in our present translation, and find that, in all cases, it is translated "oyntemente maker," but that is not an apothecary.

The trade of preparing and vending ointments and aromatics seems to have been extensively practised in early Greece and Rome; but the persons who carried it on frequently sold certain medicines along with these other wares. None of them sold medicines exclusively.

The Lacedæmonians banished ointment-makers because they wasted oil, and dyers because they destroyed the whiteness of wool. The sage Solon interdicted the sale of ointments altogether, as only appertaining to luxury (Athenæus). The ointments used in the time of Homer were kept in alabaster boxes; they were also kept in vases. The picture of one is given in "Le pitture antiche d'Ercolano," the narrow mouth of which shows that these ointments must have been liquid. The Romans had a different ointment for the different parts of the body. The ointments bore a higher price than any other luxury. When an Egyptian king died no one dare use them (Diod. Sic.) So perfect were the Egyptians in the manufacture of these odoriferous ointments, that an ancient specimen still exists which retains its perfume. The spikenard of the ancients, from which so costly an ointment was prepared, was determined by Sir Wm. Jones to be a protean plant, valerian, a sister of the mountain and Celtic nard. (Asiatic Researches.)

The market-place at Capua, where perfumes and scented ointments were sold, was called Seplasia. The person who sold the ointments was called *μυροπωλης*; the maker of them was called *μυρεψος*, or ointment boiler. But there were persons who, besides ointments and perfumes, sold the articles used by physicians, and as they frequented the Seplasia, they were called seplasiarii. This name continued in use for many centuries, and at last was used to designate the persons who compounded for physicians, their province not being to prescribe. In this sense we find the word used so late as 1541. The work of Nicolaus Alexandrinus was written, as he himself says, for the use of the physician and the seplasiarius. Whoever wishes to learn the exact nature of the office of the seplasiarii, and unguentarii, and their defence against the imputation of base practices, will find it in a work published at Rome 1603, entitled "Collegii aromatoriorum almæ urbis, nominis pharmacopolœ et seplasiarii pro defensione animadversio." The ancient seplasiarii had been charged by Pliny with sophisticating their drugs, and selling stale plasters and eye-salves, the refuse of their stock. We learn from the same author that the physicians not only purchased this refuse, instead of making their own compounds, but were even ignorant of their composition, to the great detriment and danger of their patients.

The name medicamentarii signified the same as pharmacopolæ; for medicamentum, like pharmacon, is either a remedy or a poison; and medicamentarius is a vendor of both. The pharmacopolæ were in the habit of sitting the whole day in the forum, with their little vessels, boxes, and baskets, and did not return home until a late hour. Some of those persons, instead of standing stationary at their stalls, wandered about with their wares; they were called *περιοδευτης*, or medici circumforanei; in late times they obtained the name of mountebanks, which is a literal translation of the Latin name saltimbanci—the French call them charlatins.

There was an extensive and useful class of dealers called *pigmentarii*, from the Latin pigmentum. Although they originally sold painting materials, they gradually added other commodities, such as exotics, spices, all sorts of condiments, and medicinal substances. Another class of persons who were connected with the sale of these commodities were the *παντοπωλαι*, who retailed incense, scents, along with all those articles which were used by painters, dyers, ointment boilers and physicians. Medicines were called *ιατρικη υλη*, or physicians' materials; and this is the origin of the Latin words *materia medica*. Very little different from the pantopolæ were the *ρωποπῶλαι*; they not only sold medicines, simple and compound, but they prepared the latter, and especially counterpoisons, along with the foregoing articles. The pharmacopolæ carried on a trade, the nature of which may be collected from the derivation of their name. The word *φαρμακον* means a drug possessed of active qualities, whether salutary or poisonous; the name *φαρμακοπῶλης* therefore signifies a vendor of drugs, whether salutary or poisonous; and the word was translated into Latin by *aconitarius* or poisoner, from aconitum, the poison *monkshood*.

Theophrastus gives a curious account of the tricks, superstitions, ignorance and knavery of the pharmacopolists, and rhizotomists or herbarists, of his time (B. C. about three centuries), and of the devices by which they sought to mystify their art. From this author we learn that the herbarists order some articles to be collected when the wind is in such a direction as will permit the effluvia to be blown away, such as the fruit of the dog-briar, for otherwise, say they, there will be danger to the eyes. Other articles cannot be safely gathered unless the body of the herbarist is smeared with oil, to defend it from noxious vapors. They asserted, for instance, that hellebore is of so acrimonious a nature, and so certain of affecting the head, that it is not possible to dig it for any considerable length of time. Other herbs were declared to be dangerous if cut at any other time than at night; others should be cut by day; and others, again, before sunrise, under penalty of various fanciful dangers. They found it necessary to say their prayers while they gathered some, or otherwise to protect themselves by describing circles round the plant with a two-edged sword. Sometimes, the operator, while at his work, should look towards the west, sometimes towards the east, at the same time saying his prayers. Other times, a mode very different from this pious process of herb-gathering was resorted to:

the operator was directed to dance about in a circle, and while thus gamboling, to utter a variety of lascivious expressions. Above all things, they were to guard against the approach of an eagle, for if this ill-omened bird flew very near one of these herbarists, so envied by the gods for their power over human life, the world was sure to be deprived of the valuable services of this personage in the succeeding year. Theophrastus was too sagacious a person to be deceived by these imposters into a belief of their crafty fictions; he merely relates them as fabrications. Not so Herodotus, who, having been a much more credulous character, often allowed himself to be made the vehicle to posterity of many an absurdity. Be this as it may, it is certain that the rhizotomists and pharmacopolists did all in their power to monopolize the trade, and extort a high price for their services by their impudent falsehoods.

It is not surprising that when the list of materia medica became numerous, and when many articles were brought from foreign countries at great trouble and expense, the physicians should employ other persons to supply them; it is, indeed, more a matter of surprise that they were ever able to supply themselves. Previously to the days of Herophilus, the pupils of physicians used to go into forests and deserts to collect simples at different seasons. We learn from Horace that there was a whole street in Rome occupied by persons who sold this kind of merchandise.

In the fourth century of Christianity, we find traces of the partial separation of pharmacy from medicine; and mention is occasionally made of physicians who prescribed for the sick, and caused their prescriptions to be conpounded by the pigmentarius, as in the well-known passage of Olympiodorus. This innovation made a very slow progress, and it would be tedious and useless to follow up its history, so gradual was the change. The learned Conringius, writing on this subject, and on the utility of public pharmaceutical establishments, says—"plurimis quidem seculiscaruit iis (officinis publicis) ars medica, ipsis medenttibus domi pharmaca sua conficientibus. Idem mos hodieque obtinet per omnum Asiam. In Africa primùm videntur medici hanc curam á sese in alios rejicisse, ante hos quingentos amplius annos. Avenzoaris sanè ævo qui seculi duodecimi initio undicimi fine floruit, morem illum in Africa obtinuisse, non videtur dubitandum."

Thus, according to Conringius, the physicians of Africa were the first that surrendered the practice of pharmacy into other hands, and the change began about the end of the eleventh century. The custom passed from Africa into Spain, and thence to Italy, where the confectionarii were established by the edict of Frederic II., king of the two Sicilies, under an oath that they would prepare medicines exactly according to the prescription of physicians. The better to carry this salutary regulation into effect, the physicians were directed to inspect the shops, which were called *stationes*, where the business of compounding was transacted. Thus, in the southern parts of Italy, the separation of physic and pharmacy was, for the first time, enjoined by royal authority.

All that we learn from Conringius is that the separate practice of pharmacy became more general in Africa than in other parts of the world; but it by no means follows that there was any formal dismemberment of medicine at that particular time. It was like any other great change, a very gradual and slow process. We find that the connection subsisted in other countries for centuries after this. Of many instances that might be given, I shall adduce one only, and a remarkable one, from the writings of the German alchemist Glauber, who lived about the middle of the seventeenth century. Speaking of the German physicians, he says that they bought medicines from apothecaries and chemists, and that after putting them through some further preparations, they administered them to their patients. He adds that many physicians take more care of their kitchens than of their patients, and, by buying ill-prepared medicines from unskilful persons, bring the noble art of the chemist into disrepute. But he admits that an industrious and accurate physician is not ashamed to make his medicines himself.

The first distinct declaration that I have been able to find, which defines the duties of a compounder of medicine as separarated from those of the physician, is in a work written by Saladin, of Ascalon, chief physician to the Prince of Tarento. Tiraboschi, quoting Fabricius, says that Saladin was alive in 1163. This pompous physician begins his book, which is without a date, by declaring that on account of the ignorance and unskilfulness of the *Aromatarii*,—for this is the name under which the ancient pigmentarii were then designated,—the most learned doctors are brought into contempt, and much danger results. Therefore (he says), moved by compassion for physicians, and by the entreaties of many aromatarii—I, Saladin, Doctor of Arts and of Medicine, have determined to write this treatise, entitled "Compendium Aromatariorum." Saladin seems to have been the first that proposed that the aromatarii should not be allowed to compound medicines without submitting to examination by skilful physicians; and, if found ignorant, that they should be visited with condign punishment. His book is written with the design of being the text for examination. The first question in it is "What is the duty of an aromatarius?" The answer is "terere, abluere, infundere, coquere, destillare, bene conficere, et confecta bene conservare. Propter quæ omnia dico ulterius quod aromatarii tenentur scire grammaticam, ut valeant bene intelligere dispensationes receptarum, et antidotariorum et scientiæ medicinæ." Here, then, is a clear definition of an aromatarius of Tarento about the year 1163. Saladin further describes what sort of person an aromatarius or apothecary should be. He ought not to be a boy, nor very young; nor proud, pompous, or addicted to women and vanity. He should be a stranger to the gaming table and tavern. Neither for love, fear, or money shall he do anything contrary to conscience or the honor of a physician. He shall not administer to pregnant women medicines calculated to provoke abortion; nor through fear of power, or love of money, shall he prepare poisonous medicines or poisoned cups; nor make syrups with honey which should be made with sugar. The aromatarius, of himself and without the permission and advice of a skilful physician, is not to do anything, and especially he is not to add anything to laxative medicines. He is to reject spoiled medicines and pills which have become as hard as stones, and he shall not substitute one thing for another when he happens not to have the article. Saladin lastly informs us of a very important part of the duty of the aromatarius, one which, if used in the present day, would be considered a very gratuitous exercise of his duty:—"The aromatarius," he says, "should know the taste and smell of the different simples, so that if any young and inexperienced physician should wish to prescribe horrible or disgusting medicines for any sick person, the aromatarius shall not allow it to be done, but shall expostulate with the physician in order that better and more agreeable ones may be substituted, lest by the use of the former the stomach of the patient be disturbed.

To these prudent instructions, for the benefit of the aromatarius, Saladin subjoins others still more prudent, touching the utility of a wife, and how much such an appendage to his establishment tends to keep him in order.

From this book we at least learn that the edict of Frederic II. was not inoperative in the southern parts of Italy, and that the profession of the compounder of medicine was, in Italy, in the twelfth century, perfectly distinct from that of the prescriber. We also learn that the compounders were so ignorant as to bring physicians into disrepute; and that some of them were so nefarious as to prepare poison-potions for any one that paid them, as indeed is broadly hinted in the "Golden Ass" of Apuleius. The ignorance of the aromatarii seems to have been an universal subject of complaint and dread to physicians; and the labors of Saladin seem to have very little improved them. For, in half a century after, we find in the Thesaurus Aromatoriorum, written by Paulus Svardus about the beginning of the sixteenth century, and dedicated to "The Most Worshipful Doctors of the College of Milan," the following passage—"cum animadverterem, colendissimi doctores, quamplures, in nonnullis aromatoriorum apothecis, errores ignorantiâ committi, etc.," and it was on this account or pretext that he published his book.

There is some uncertainty about the etymology of the word apothecary. Spelman defines apothecarii thus—"vaticinatores, procuratores, anglicè stewards." Apotheca, a magazine, from *απο*, an intensive preposition, and *τιθημι*, to put up; and apothecarius should mean the steward who puts things together with care. We have certain evidence of the word apothecary in a medical sense, and confirmed by use in such a manner as to constitute an acknowledged word in the public acts of England in the middle of the fourteenth century. We find in Rymer's Fœdera, Anno 1345, a grant of sixpence a day to "dilectus Coursus de Gangeland Apothecarius Londoniæ," "propter curam solicitam circa nos;" what this personal care of the apothecary was we are not told. Yet, in Rymer, 1537, we find John Soda designated Pharmacopolam, showing that both names were in use in England at that time. For attending the Lady Mary he had 40 marks a year. An army doctor had 4d. a day. Fosbrooke says that the apothecaries first appeared in England in 1345; but the grant to Coursus de Gangeland shows that they were then well known in London. In the south of Europe the word apothecarius was commonly used, and aromatarius was generally laid aside; and in 1504, a Doctor of Medicine and Arts published a book which he called Lumen Apothecariorum.

About the middle of the same century, during the reign of Elizabeth, a physician named Bulleyn thought fit to lecture the apothecaries of his time in much the same strain as did Saladin nearly four centuries before. His rules for the life and conduct of an apothecary have been preserved by Mr. Jeafferson; they afford a good specimen of the supremacy assumed by physicians over apothecaries in past times. The following are extracts:—"The apothecary must not be suborned for money to hurt mankind; his house and shop must be cleanly; his mortars, stills, pots, etc., must be clean and sweet; he must have charcoal at hand to make decoctions; he must have a clean place in his shop for physic, and 'a baser place for the chirurgerie stuff;' he must 'neither increase nor diminish the physician's bill (prescription), *and keep it up for his own discharge;*' he shall neither buy nor sell rotten drugs; he shall not substitute one ingredient for another in a prescription; he shall meddle only in his own vocation, and remember that '*his office is only to be the physician's cook;*' he shall use true measure and weight."—(A book about Doctors.)

The only part of this, in the present day, unnecessary advice with which the apothecary does not comply, is that important one of keeping the prescription "for his own discharge." Of late years the physician instructs his patient to produce his last prescription "at the next visit." The patient, preferring the original to a copy, obtains it—thus depriving the apothecary of the *means of recovering the debt*, should compulsion become necessary, and of exculpating himself, should any untoward circumstance occur.—*Med. Press and Circ.*, Oct. 30, 1867.

LASTER'S NEW METHOD OF PREPARING THE SULPHATE OF MANGANESE.

Communicated by Alexander J. Semmes, M. D.
Visiting Physician to the Charity Hospital, New Orleans, La.

The various combinations of manganese have been employed comparatively but a short time in pharmaceutical operations, and in the treatment of disease; the economy of their preparation being but partially understood, it was with the hope of rendering their preparation easier that Mr. Laster, the accomplished Chemist of the Charity Hospital, was induced, after careful examination, to suggest his new process to the Pharmaceutist.

Among the more important salts of manganese susceptible of therapeutic application, may be mentioned the sulphate, carbonate, phosphate, iodide, and chloride of manganese; the sulphate is, of this number, the most important from its use as a technical and medicinal agent; it is manufactured upon the large scale for dyeing purposes by heating a mixture of sulphate of iron and binoxide of manganese to redness; the sulphate is decomposed at the high temperature, becoming sesquioxidized at the expense of a portion of the acid, the undecomposed acid uniting with a portion of protoxide of manganese produced under the circumstances.

Some would suppose this to be an easy process, and that the iron was sesquioxidized at the expense of the binoxide instead of the acid; but such is not the case, for the sulphate of iron commences to decompose rapidly at a low red heat, whereas the binoxide requires a full red heat for its partial decomposition.

Again, if the binoxide, instead of the acid, sesquioxidizes the iron, there should be no elimination of sulphurous acid, which is the case directly after the heat has reached redness, and there should be no elimination of free oxygen, as takes place when the heat becomes full red; consequently we may know from these phenomena that there is loss of acid from its decomposition, also a loss of sulphate of manganese, because at the high temperature the sulphate is decomposed into protosesquioxide of manganese, sulphurous and sulphuric acids, thus ($3\ MnO\ SO^3$)$=$ SO^2, $2\ SO^3+Mn^3O^4$, and whatever be the proportions of sulphate or binoxide used in this process there will be an excess of protosesquioxide of manganese. The mass, after cooling, is to be subjected to the action of water, which removes the sulphate of manganese, which is freed from iron by the usual process. This method of preparing the above sulphate is the most laborious, and the results generally unsatisfactory.

A second method is to heat binoxide of manganese with sulphuric acid, and after the mass has cooled, again treating with sulphuric acid, the moistened mass is to be again heated; the portion of sulphate of manganese formed is to be removed and treated as in the first process. Operating in this manner we not only use an excess of sulphuric acid, which is driven off at the high temperature, but we have the bin, or as Mr. Laster more properly expresses it, the compound Mn^3O^4, which eventually changes to binoxide eveloping in excess the sulphate formed.

The admirable process introduced by Mr. Laster enables the pharmaceutist to overcome these difficulties, and is thus briefly stated by him:

"Take of	Binoxide of Manganese,	40 parts,
	Hydrochloric Acid (Commercial),	200 parts.

Dissolve the binoxide in the acid, beneath a chimney flue, and when solution is complete and chlorine no longer evolved, mix very gradually sulphuric acid (53) parts with the reddish liquid; continue the evaporation beneath the flue until acid vapor is no longer driven off, and the mass becomes dry. Dissolve this mass in water (350 parts) heated to the boiling point. Treat this solution with carbonate of manganese until it becomes rose red, filter or decant, evaporate and crystallize."

Unlike the objectionable article of the U. S. Pharmacopœia, the sulphate of managanese* prepared according to Laster's new method contains no arsenic, and is otherwise possessed of the usual properties of the pure salt; this sulphate can be employed in the preparation of the carbonate, phosphate, and lactate, by the usual processes of double decomposition.

IODIDE OF MANGANESE.—This preparation dissolved in syrup is formed, according to the U. S. Dispensatory, by dissolving iodide of potassium and sulphate of managanese in water, sweetened with syrup; and mixing the resulting solutions; by double decomposition, iodide of manganese and sulphate of potassa are formed, a portion of the latter salt precipitating from its sparing solubility.

To prepare this iodide Mr. Laster has devised the succeeding formulæ, either of which he hopes will meet the requirements of the pharmaceutist and medical practitioner:

"Take of	Iodide of Calcium,	grs.	142,
	Sulphate Manganese,	grs.	86,
	Water, at boiling point,	pint	1.

Dissolve the sulphate in one-half of the water heated to the boiling point, and the iodide in remainder; mix the solutions, continue the boiling for ten minutes, and, after subsidence of the precipitate, and while solution is warm, filter and evaporate to dryness. Or,

Take of	Iodide of Lead,	grs.	220,
	Sulphate of Manganese,	grs.	87,
	Water,	ounces,	20.

Dissolve the sulphate of managanese in the water heated to the boiling point, and add the iodide of lead portion-wise, observing to stir the contents of the capsule after each addition; when all the iodide has been introduced, continue the boiling for fifteen minutes, then filter and evaporate to dryness.

In the first process the resultants of the decomposition are iodide of manganese and the insoluble sulphate of lime; in the second, the same iodide is formed, and at the same time sulphate of lead is precipitated; the insoluble compounds are removed by filtration; in either instance a slight excess of sulphate of managanese is employed to insure the complete decomposition of the calcic and plumbic iodides.

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* This remark is unjust. There is no process given in the United States Pharmacopœia, and the tests given in the officinal list indicate a pure salt.—EDITOR AMER. JOURN. PHARM.

The water of crystallization in sulphate of manganese being variable, Mr. Laster is always accustomed to dry the sulphate used at a temperature of 400°; dried at this temperature, the preparation has a uniform constitution, which is not the case when the crystallized salt is employed.

On some other occasion the therapeutical uses of this and various other preparations of manganese may be referred to; but I would remark that it is especially in case of poverty of the blood, hypertrophy of the spleen, urethra vaginal catarrh, but more especially when in combinations with iron, that benefit may be derived from the exhibition of the manganic salts. In strumous, syphilitic, or cancerous affection, and in abnormal states of the nervous system dependent on deprivation of the blood, or exhaustion from venereal excesses, the syrup of the iodide of manganese may be used with advantage.—*Richmond Med. Journ., Jan.* 1868.

A VISIT TO VESUVIUS.

NAPLES, May, 1867.

The outline of Vesuvius against the eastern sky, always visible from the quays of Naples when not obscured by clouds, is an object upon which the eye of the traveller rests with abiding interest. Much as there is to attract in other directions, this historic mountain with its incidents is the leading object that draws so many to this populous and interesting city. Seen now from this point, the mountain rises beyond the bay as a flattened cone, the apex of which has been removed and a deep notch cut in its substance, giving it the appearance of a double-headed mountain. The buildings of various kinds which dot its base are very numerous, and it is said that a population of 70 to 80 thousand domicile between Portici and Castelamare inclusive, on the south-western base of the mountain.

It having been determined to visit Vesuvius in the morning, a slight glance at some points of its history will aid us in appreciating its features, which we are able to give from the excellent account of Murray. The first eruption of Vesuvius in historic times was in the year A. D. 79, during the reign of Titus. It was recognized by the ancients, however, as of volcanic nature, and various traditions regarding it existed. Plutarch describes Spartacus and his followers as encamping in the rocky hollow (crater) on the summit, which was clothed with wild vines and which was entered by a pass on the side towards Naples. This indicates the long quiescent period which must have elapsed preceding the eruption of 79. After several years of occasional subterranean disturbance in the vicinity of Vesuvius, during which earthquakes had damaged Herculaneum, Pompeii, Puzzuoli, etc., the great eruption of A. D. 79 occurred, which buried the two former cities. The account left by Pliny of the circumstances of this eruption, which occasioned the death of the elder Pliny, near Stabiæ, corroborates the examinations of modern geologists that no lava issued from Vesuvius on that occasion, but that the eruption consisted in the ejection of vast quantities of ashes, water and mud, with prodigious quantities of stones and fragments of various volcanic matters. There must have been a strong current of air from the north which carried the loose matter, including stones of several pounds weight, as far as Pompeii, and lesser ones to Stabiæ, and the present more gradual inclination of the base of Vesuvius in that direction is additional evidence of the immense bulk of these ejections, which at the distance of several miles were sufficient to entomb so extensive a city as Pompeii. While at the latter city we witnessed the laborers at work removing the ashes from a part of the excavations now going on, and obtained a specimen, which is of a uniform light stone color, very friable, no sand visible, and appearing as though it had assumed its present position in a comparatively dry state. The ejection of water and steam on that occasion appears to have been one of the most prominent characteristics of the eruption, and to have been the immediate cause of overwhelming Herculaneum with a torrent of mud formed of the light ashes which it gathered up in its descent along the mountain slopes to the bay, and which penetrated at once into every part of the buildings of that fated city; not however before most of the inhabitants escaped. Whether the water thus ejected was derived from a rupture of the earth's crust under the sea, is a fruitful subject of speculation for the geologists. The result of this eruption was to destroy the whole south-western wall of the ancient crater towards the bay, which was probably disintegrated under the influence of fire and superheated steam, (the power of which in effecting the decomposition of minerals, is well known in the chemical laboratory), and ejected as ashes and mud, changing the coast line so as to make the site of Pompeii half a mile inland, whilst it was formerly a seaport on the bay. The remainder of this old crater yet exists, as we shall presently see, a memento of this wonderful catastrophe. In the year 472 an eruption occurred, that again visited the sites of Herculaneum and Pompeii, which had become occupied by villages. Other eruptions happened in the years 512, 685, 993, 1036, 1049, 1139, 1306 and 1500. After the eruption of 1500, described by Leone, of Nola, the crater was "five miles in circuit, and 1000 paces deep," and remained quiescent for a hundred and thirty-one years, during which period its sides became covered with vegetation, shrubs, and forest trees, and the floor of the crater even visited by cattle and other animals. In 1631 one of the greatest eruptions occurred; the immense crater just noted was filled with volcanic matter, and on the 16th of December an earthquake caused a violent irruption of the sea towards the mountain, causing great destruction of life, and at the same time "from the summit of the cone seven streams of lava issued, one reaching Torre del Annunziata, seen on the road to Pompeii, one destroyed two-thirds of Torre del Greco, a third destroyed Resina, on the site of Herculaneum, another destroyed part of Portici, and formed the present site on which the Royal Palace and La Favorita were subsequently built." This eruption was also accompanied by great torrents of rain, causing inundations towards Nola. Eruptions followed this in 1660, 1682, 1690, 1696, 1698, 1701, 1707, 1712, 1717, 1720, 1728, 1730 and in 1737, when an immense outpouring of lava occurred from the base of the cone, estimated at over 33 millions of cubic feet, lava also issuing from the summit. The quantity of ashes discharged during this eruption was very great and did damage to trees by its weight. Then in 1751, 1754, 1758, 1760, 1766, 1767, 1770, 1776 and 1779. This last was one of the most remarkable on record, being accompanied by an immense explosion in the interior, immediately following which, says Sir William Hamilton, "In an instant a fountain of liquid transparent fire began to rise. . . The height of this stupendous column of fire could not be less than three times that of Vesuvius itself." The ejected matter fell partly on the mountain itself, partly on Somma and the intervening space, and partly eastwards toward Ottajano, where it broke in the roofs and windows of houses, destroyed the woods and vineyards and filled the streets to the depth of several feet with ashes, some of which fell a hundred miles off. In 1784, 1786, 1787, 1793—4, the latter destroying the cathedral and the greater part of the town of Torre del Greco, poured into the sea, extending the coast line out 380 feet, by width 1200, and 15 feet above the level of the water. Then in 1804, 1805, 1809, 1812, 1813, 1817, 1818, 1820 and 1822. On this last occasion the great cone fell in with a crash, after which two streams of lava flowed towards Resina. Sir Charles Lyell found this lava had not lost its heat in 1828. The crater was irregular in shape, three miles in circumference and of great depth, its rim varying 500 feet in height. Then in 1828, 1831 and 1834, when the lava ran nine miles, destroying Caposecco and threatening Pompeii. In 1838, 1845, 1847, 1850; the latter noted for enveloping the woods of Bosco Reale, when various curious phenomena occurred as the trees were consumed in the lava. In 1855 the lava flowed down into the Atrio del Cavallo, and keeping to the north of the Hermitage did much damage in the places below towards St. Sebastiano and Massa. This lava was remarkable for slow cooling and for containing chloride of lead as a sublimate in its fissures. Its direction caused at one time fears for Portici, and the guides yet speak of it as the great eruption of 1855. In 1859 an eruption occurred on the side of the cone, a stream of lava running into the Atrio del Cavallo and thence on either side of the Hermitage hill, poured in a magnificent fiery torrent into the Fossa Grande on the north side. The eruption of 1861 vented itself in a fissure 2000 yards long above Torre del Greco, one vent pouring out lava, accompanied by severe earthquakes that nearly destroyed the town. This outlet was lower down towards the coast than any of the preceding. In 1865 the disturbance was confined chiefly to the old crater, which in May of that year was described as being 950 yards in circumference, and perhaps 300 feet deep. The observer remarked that the small sub-crater at the bottom would soon fill the cavity of the general crater. This is the latest account we can find, previous to our visit.

Our party, consisting of seven persons and the guide, left the hotel at five o'clock, A. M. The route after passing Castel Carmine, carried us along the *Marinella* or bay shore, which at that early hour was a busy scene, where boatmen and fishermen were actors, and where formerly the Lazzaroni were prone to bask in the sun. Passing the Ponte della Maddalena over the Sebeto, we soon entered Strada Portici, having the immense line of brick buildings, originally erected for granaries and now used as barracks, on the right. These and the continued walls and fences of houses and villas along the bay shore shut out the view of the water, and detract much from the interest of the ride. Some of the shops of Portici were open, and already strings of maccaroni were hanging out to dry in front of the factories. We met several of the peculiar two wheeled vehicles, with long shafts harnessed above the backs of the horses, and which frequently bore as many as 18 to 22 poor passengers, sitting and clinging to them, bound to Naples from Resina. Passing the court yard of the Royal Palace we soon entered Resina, built on the site of Herculaneum, and where the Vesuvian guides have their head quarters. After making arrangements for the ascent, we drove on to the guides house on the outskirts of the town and ate our breakfast, and then each addressed himself to the important business of selecting a saddle horse from the lot in waiting. Our party embraced representatives from the medical, pharmaceutical, collegiate and mercantile professions, and despite the sorry nags, and ancient saddles upon which some were mounted, made quite a respectable cavalcade, at least in numbers. The weather was fine, almost too warm for such an expedition, the road, not intended for wheeled vehicles, was narrow stony, irregular, and hedged in by fences. Many trees were in bloom, and the almond and fig had set their fruits. The olive blossoms had not yet opened, but the rich scarlet flowers of the pomegranate here and there in the hedge rows, formed a brilliant contrast with the foliage. The vine grown on stakes, rude trellises and in festoons is the most important crop on these fertile slopes. The road also served, in many places, as the bed of a torrent in rainy weather, so much was it washed, but after reaching the plateau it was better, and our view greatly improved, being less obstructed by immediate objects.

Far to the west lay Naples on its beautiful bay, and Posilipo, with the hills of Sorrento and Capri nearly south; whilst beneath us and around lay the accumulated lavas and ashes of the eruptions of eighteen centuries of the historic era, which under the disintegrating action of time have been coated by a fertile soil now teeming with the verdure of spring, wholly unmindful of the slender lease it holds on permanence. In glancing over the numerous villas and villages which stud the sloping sides of the mountain and the shores of the bay, it is nearly impossible to realize that this is the grand theatre of the terrible and sublime eruptions that we have hastily enumerated above.

Continuing our journey mountainward among vineyards and orchards, we abandoned the road and entered a lateral path, a change rendered necessary by the proximity of the lava of 1859, which destroyed the excellent carriage road, built by government, leading to the observatory and hermitage. Subsequently we saw the point where the road passed under the lava. Our route now passed over the lava of 1859, which has to be crossed to reach the hermitage. The path is very rough. but will soon become sufficiently worn to serve the purpose. The recent bed of lava is here spread out very wide, and extends to the base of the cone. It is impossible to describe the appearance of utter desolation it presents; the surface is covered with broken masses of every size and shape, mixed up with and partially surrounded by the most curious convolutions of solidified melted matter like masses of fossilized intestines of some gigantic animal. The cooling power of the atmosphere is so great that very soon after the lava reaches the plateau, where its progress is less rapid, the exterior becomes chilled, especially at the edges, and as the pressure of the interior fluid mass urges it forward the crust is broken into fragments, enabling the lava to escape, and in its turn to be chilled, until a period in its progress arrives when the crust is capable of resisting the diminished pressure of the partially cooled interior. It is this incessant action of the interior on the exterior that gives the peculiar vermiculated character to the surface of the lava. In color, this lava is nearly black, extending for miles, filling up ravines and valleys. and pouring over precipices, and in one spot in approaching the hermitage forming an abrupt wall of slag-like matter thirty or forty feet high. The path passed near one of the small craters of the eruption of 1859, but we did not leave our horses to examine it. Before reaching the Hermitage, we arrive at a point where the lava of 1855 is seen. Its color is less dark, indicating the effect of the atmospheric agencies, but yet devoid of life, saving a very few plants that have rooted in some of its crevices. The Hermitage stands on a bluff or spur of the old Mount Somma, just at the opening of the crescent-shaped valley called *Atrio del Cavallo*, between the cone of Vesuvius and the interior walls of the old crater of Somma, and no more admirable spot could be chosen whence to witness an eruption, though its proximity is sometimes attended with danger, as in 1855, when the current passed on both sides of the hill. We now pushed on up the steep path of the Hermitage hill and over this lava, and entered the Atrio, where the path is more or less broken as it passes over the lavas of various ages, and requires great caution on the part of the animals to keep their feet. The scene here is worth pausing to view; on the left extending far in advance are the abrupt rocky walls of the old crater of Somma 800 feet high, with various flowering plants established in its crevices, but far too sparse to form a continuous covering to its desolate lineaments; on the right rises the vast cone of Vesuvius, dark and sombre, and lifeless externally, more than a thousand feet perpendicular above the path, which is in the middle of the valley. About two miles beyond the Hermitage, the path gradually rising, we reach the place of ascent, which is an inclined plane, constructed of fragments of lava of all sizes thrown irregularly together so as to form a sort of stairs, the stones giving a tolerable foothold, but without any order or regularity. Dismounting, our horses were taken by boys, each of whom claims his pay in due time. Then came a busy scene; the numerous men employed to aid in the ascent, such as desired it, vociferously urged their claims. Two of our party employed a sort of sedan chair arrangement carried by four men; most of the others received aid by a strap held by a man in advance, whilst two of us depended solely on our own muscle for the ascent. It was near noon, very warm for the season, and illy prepared by a partial breakfast, we addressed ourselves to the task. In recurring to the effort it required to mount this gigantic stairs, it certainly was more tiresome than the more difficult and varied ascent of Mount Washington; but this arose from the monotony of the labor, and the want of objects to attract the attention during the effort. We found it necessary to rest at intervals, but accomplished the task in about an hour, certainly one of the least acceptable ever undertaken. But on gaining the top we were repaid. Far below us were the sedans slowly creeping up, with foot passengers scattered on the way. Our horses looked like dogs in size, and the men like ants or pebbles, according as they were in motion or quiescent, so diminutive did they appear a thousand feet below us. The irregular motion of the sedan must be attended with some suspicions of danger by the uninitiated. From the edge of the cone to the edge of the crater at this point, is perhaps a furlong, covered with scoria, ashes and masses of lava. On reaching the crater, judge of our disappointment in finding a central conical mass rising in the centre, higher than the highest edges of the crater, which was filled nearly to the edge with solid blocks of lava without any abyss, or indication of internal activity, not even visible vapor. The lava was rent in all directions, as if by the cooling and subsidence of the mass beneath. It was of a dark gray color, very hard and sonorous when struck. Passing around to the south or highest side we saw a number of laborers engaged in an excavation on the inside of the edge of the crater near the the top, gathering sulphur into bags, which they carried on poles to the place of descent. It is very impure and used only for the vine disease. We seated ourselves here, and whilst enjoying one of the grandest panoramas in existence, partook of the lunch brought up by our guide, and, in the absence of water which had been forgotten, substituted some very good Lachrama Christi, the well known wine of Vesuvius. The view was superb. The entire bay of Naples, its enclosing islands, and the promontories of Sorrento and Misenium; Naples spread out like a map, the distant Appenines on the one hand, and the Mediterranean on the other, whilst below, beyond the base of the cone were the lavas of latter times, and further down the villas, peasant houses and villages that numerously dotted the gently inclined base of the mountain down to the towns along the bay shore. Six miles off lay disentombed Pompeii, whilst all around, but more especially toward the bay, lay the scene where the terrible eruptions of centuries have vented their fury, and piled up stratum on stratum of ashes and lava and scoria. Leaving the sulphur gleaners at their disagreeable labors, we continued around the edge of the crater, the highest point being nearly south, towards Pompeii; from here the cone of scoria stones and ashes in the centre of the crater is seen to the best advantage, and a considerable depression existing on this side affords a better idea of a crater than on the other. In completing the circuit we had walked about three-quarters of a mile. The guide now conducted us over the dislocated blocks of lava by a very irregular route to the central cone, stopping on the way to put some eggs in a crevice to be cooked by our return. The actual elevation of the central cone was not known, but it was probably thirty or forty feet above the lava upon which we crossed. It consists of ashes, stones and scoria, the latter of various shades of color, from gray and yellow to orange red and almost vermillion red. From a spot on one side sulphurous vapor issues, and our guide, by thrusting in a piece of paper, caused its ignition. This and the heat sensibly felt issuing from some of the crevices in the lava, were the only indications that the energy of the volcano, though dormant, still existed, and by the old rule of a full crater may be expected to rouse itself ere long. After a full view of the cone itself and the surrounding crater from this point, we returned across the lava bridge, securing the cooked eggs *en route* and soon arrived at the place of descent. This is along side and east of the route of ascent, and is an inclined plane of loose ashes. The only care requisite is to keep erect, and use the feet as in walking as fast as possible, each step causing a descent of from three to six feet, according to the energy of the traveller, the trip down being made in about ten minutes. Sometimes the most ludicrous scenes occur in this journey by persons losing their balance and pitching or sliding in the dust. On reaching the valley a busy scene ensued in regaining our saddles, when several found themselves differently mounted, some for the better, and commenced our downward trip. We stopped a little while to rest at the Hermitage, where water was obtainable for the first time since our leaving the coast, and we soon converted our lemons and sugar into lemonade that tasted like nectar, so needed was the cooling beverage after the ordeal we had gone through. Half a day might readily be spent here by the leisure traveller, but our party soon resumed their saddles and returned to the carriages at Resina without further incident, thoroughly fatigued but highly gratified with the visit to Vesuvius.

[Many of our readers are aware that, since about the middle of December, Mount Vesuvius has been in active eruption, and the prognostics of last May have proved correct. The opportunities for witnessing the phenomena are said to have been unusually favorable. The first flow of lava was eastward towards Ottajano, but the more recent currents have been in the Atrio del Cavallo, and down over the lava of 1859, described above. One portion of the stream passed near the observatory and thence toward Resina, and the other made in the direction of Torre del Greco, but the volume was not great enough to continue the current so as to endanger that town. One observer describes a shower of red hot stones, and rocky masses of tons in weight, ejected to great heights, falling in all manner of curves, some within and some without the crater, whilst other fiery masses, falling on the flanks of the cone, would rebound down its sides in great leaps until shivered to pieces or lodged by some impediment. The ascending and descending lines of fire crossed each other in all directions over the crater, presenting a display of natural pyrotechny of surpassing grandeur and beauty, whilst vast volumes of smoking vapor issuing from the crater, extending from above the mountain towards Capri, formed a vast arch, reflecting back the light from the crater and lava streams. Those who have recently traversed the scene of these phenomena, when all was quiet and peaceful, can fully appreciate the wonderful transition.—W. P., Jr.]

Varieties.

International Weights and Measures.—The Committee of Weights, Measures and Coins, at the Universal Exhibition of Paris, 1867, have made their official report relative to units of measure and weight. The commission advocates the following measures: The prompt substitution, in all its integrity, of the metric system, for the old systems of weights and measures, as it is practically adopted in several other countries in the west of Europe. This system, introduced and legalized optionally, cannot be at once rendered imperative to the exclusion of every other system. A certain delay is necessary for the change; and the different nations are alone capable of fixing its duration. Let us observe in the meantime that experience in several countries has proved that a too long delay does not have the effect of sensibly facilitating the accomplishment of this task. Thus it is desirable that Governments take, henceforth, the following measures, viz.:—

1. To order the teaching of the metric system in public schools, and to require that it should form part of the public examinations.

2. To introduce its use into scientific publications, in public statistics, in postal arrangements, in the custom houses, and other branches of Government administration.

3. The commission does not consider, as appertaining to its mission, the duty of making standards the exact prototypes of those of Paris. The Government of each country will take upon itself the verification of each of these standards.

The commission declares that the present report contains the expression of its deliberations and conclusions. It expresses a wish that different nations will yield to the solicitations of science and the manifestation of opinion.—*Lon. Chem. News, July* 12, 1867.

Castor Oil Bean in California.—The San Francisco Bulletin says: The experiments made last year in cultivating castor beans in this State may be set down on the whole as successful. And yet the success was not so as to warrant any very heavy ventures in this direction.

The bean plant grows luxuriantly and the yield is very great, surpassing, in those instances which came under our observation, that of any other oil seed save the sunflower. But there is no way of gathering the crops known to our people, which dispenses with a large amount of hand labor. The seeds do not ripen simultaneously, but a few only at a time, ranging over a period of several weeks. If the seeds are not gathered as soon as ripe the balls snap, the beans are scattered over the ground, and in that condition are hardly worth the cost of gathering. When labor can be had cheap, as for instance that of children or Chinamen, no doubt the crop can be raised at a large profit.

The beans will even plant themselves and grow with very little attention, often monopolizing the grounds to the exclusion of weeds. But the trouble is they cannot gather themselves, or ripen so that a clean job can be done by any agricultural machine yet invented. There is likely to grow up here a large demand for the castor bean, and no doubt the difficulties we have noticed will be finally overcome. The making of castor oil will soon come to be a special business, and we may say that much more skill is required in the manufacture of merchantable castor oil than is required in the production of any other of the vegetable oils. With a powerful press the grinding process may be wholly dispensed with; but the bleaching and clarifying process requires considerable skill and some knowledge of chemistry.—*Jour. App. Chem., May*, 1867.

Editorial Department.

Physicians Prescriptions; Should they be Renewed without a Written Order?—During the past year several portions of the medical profession have been exercised on this subject, and many articles have appeared in the medical and pharmaceutical journals bearing upon it. Beyond this, and brought into the discussion by some of the writers and speakers, various charges and allegations of malpractice or unprofessional conduct have been adduced as calling for united action on the part of the medical profession to abate it on the part of the apothecaries. The East River Medical Association of the City of New York, in a communication to the Association, set forth certain resolutions it had passed some months before, and requesting their consideration, and which were previously printed in the September number of this journal. Owing to the late period at which they were introduced, they were not considered, but passed to the next meeting of 1868 with other unfinished business. By comparing the original resolutions published in our journal with the resolutions as presented to the Association, a marked difference will be seen, the word "pecuniary" and others being omitted in those presented to the Association, which, in our opinion, was honestly and openly expressed in the Society, and should have been sent unaltered to the Association. They considered their pecuniary interest injured by the repetition of prescriptions without an order, and hence in great measure arose the movement for which a good reason had to be given; and in the second resolution this is found, viz.: That the practice of renewing prescriptions without orders endangers the interests and lives of patients. If the matter is kept on this basis, and the physician will live up to it, that is to say will take the *grave responsibility it involves of refusing his patient the medicine he has ordered, unless it is again ordered in writing*, all honorably disposed apothecaries will cheerfully accede and in good faith carry out the arrangement. But it cannot be done otherwise. Let the prescription carry on its face, either printed or written, the direction not to repeat without a written order from the physician, who should sign and date it. The patient can then see it, and the very fact that he presents it is an acknowledgement that he agrees to the contract with the physician and will abide by it.

In matters of this kind usage is law, to a great extent, and the customs of the old countries from which we derived our ideas of medical and pharmaceutical practice is quite contrary to the view of the resolutions, it being the universal custom to return the original prescription to the patient or his representative, and this is equivalent to giving him the right of renewal. Here custom has to a great degree sanctioned the retention of the original prescription by the apothecary who usually, when requested, gives a copy to the patient, but not otherwise. Custom also sanctions the repetition of prescriptions by the verbal request of the patient or by the simple presentation of the label, and this custom is based, in nine cases out of ten, on the *verbal* direction of the physician to the attendant, and of which the apothecary can have no personal knowledge. With this custom so deeply impressed on the habits of the physicians themselves, and on the heads of families, how is it possible to adopt any such general and sweeping rule as the East River Medical Association's Resolution, viz: "That we respectfully request that no druggist will renew the prescriptions of any physician connected with this Society, without due authority for each and every such renewal." Physicians may be called out of town unexpectedly, may omit a visit after directing the medicine then prescribed to be continued, or may *forget* to give the written order for renewal, and in various other ways come in conflict with such a rule. How then is the apothecary to act? Must he take the responsibility to supply the medicine, or, entrenched behind the letter of the order, let the patient suffer until he has permission to get the means of relief under the red tape of authority?

That ill consequences have flowed from the injudicious continuance, by repetition, of prescriptions, none can doubt who for a series of years have been engaged in an active business; but the mischief thus occurring would, in our opinion, be but a small fraction of that which would arise from the strict carrying out by apothecaries of the rule as promulgated by the East River Medical Association.

As regards the other charges perhaps the most serious one is that of giving advice, or, as it is termed, prescribing over the counter. That this is done to some extent in many neighborhoods can hardly be doubted. The wonder is not that it is done, but how in some places it can be avoided. Much of the prescribing is for the very poor, to whom in many cases it is a real charity. A large portion of it is done by medical men who are the proprietors of stores, and the example of such does not tend to prevent the apothecary proper from doing likewise. Both practically and theoretically we have honestly advocated the separation of the Medical function from Pharmacy, and shall continue to do so in justice to the physician (and the patient) in all cases appropriate for his aid, but we believe in all stores and in every neighborhood there is a certain amount of information that will always be expected at the hands of the apothecary, and to refuse which would destroy much of his real usefulness to society.

The charges of interfering with physicians, criticizing them before patients, substituting one medicine for another, etc., are so gross and indefensible that we shall only state them to denounce them as not to be justified on any grounds, and so far as we know they must be confined to a limited class. We believe the true interest of physicians and apothecaries should lead them to the utmost friendliness and candor towards each other in ethics. The reputation of the physician should be as dear to the apothecary as his own, and he should always be ready to uphold it as part of his duty so long as it is beyond reproach, by the observance of those ethical rules embraced in the paper of advice issued jointly by the County Medical Society of Philadelphia and the College of Pharmacy.

THE COLLEGE BUILDING.—The Committee of sixteen having in charge the subject of obtaining a new College Hall have, since our last issue, sold the present building for the sum of $15,000, and are proceeding to raise the necessary additional funds required to erect the new building, by an appeal to the pharmaceutists and druggists of Philadelphia. Several liberal contributions have been made, and already one-half of the sum needed has been raised. As the new building is intended to embrace a much more liberal accommodation for the convenience of members; and as it is hoped that the usefulness of the College to the members personally will thereby be greatly enhanced, it is particularly desirable to interest all the members in the project, so that when it gets into operation they will be prepared to take part in carrying forward the improvements in the management of the College affairs which it is proposed to inaugurate, including a reading room and museum.

KANSAS COLLEGE OF PHARMACY.—We are informed that a convention of druggists and pharmaceutists met at Leavenworth, Kansas, on the 12th of November, 1867, to inaugurate a Pharmaceutical Association for that State, and that the following list of officers were elected on that occasion:—

W. S. Greene, of Topeka, for *President;* T. O Bigney, of Leavenworth, and B. W. Woodward, of Lawrence, for *Vice-Presidents;* Robt. J. Brown, of Leavenworth. for *Secretary;* R. Parham, of Leavenworth, for *Treasurer;* and Messrs. Egersdorff, Armes and Brecklein for *Trustees.*

It is proposed to seek an act of incorporation. We will be pleased to receive information of the progress of the Society, which has our best wishes.

BOSTON JOURNAL OF CHEMISTRY.—During the past year a monthly sheet has been issued under this head, in Boston, by J. R. Nichols & Co. The sheet contains a selection of items of general interest, with some original communications, and is neatly printed. Price, 50 cents per annum.

TOURTELOT'S EXTRACT OF BEEF.—This form of extract of beef is now prepared in vacuo by the Messrs. Tourtelot, of Chicago, of a quality equal to the best in the market, and put up in small jars for convenience. Its consistence is nearly as firm as the extract of Borden, and claims to be more readily soluble, from retaining a portion of moisture. We have observed it during the past two months under circumstances favorable for change, if disposed to spoil, and it has retained its characteristic odor and appearance,—a permanence not possessed by their former less concentrated extract. It is strongly recommended by medical officers of the army, who have extensively used it in hospital practice.

A Manual of Inorganic Chemistry, arranged to facilitate the experimental demonstration af the facts and principles of the Science. By Charles W. Eliot and Frank H. Storer, Professors of Analytical and of Industrial Chemistry in the Massachusetts Institute of Technology. Second edition, New York; Ivison, Phinney, Blakeman & Co., 1868; pp. 664, 12 mo.

A pretty thorough glance over the pages of this book has left an impression highly favorable to its merits as a "Manual of Inorganic Chemistry." It is written in a style at once agreeable and effective, arranges the subjects in natural groups, and at the commencement demonstrates every step in advance by experiment, until the student is rendered familiar with the analytical and synthetical methods of chemical investigation, and brings in, where most appropriate, the discussion of principles and the explanation of processes, laws and methods, so as to impress the beginner in each case with an example in the discussion of the subject then before him.

Commencing with oxygen, nitrogen and hydrogen, air and water are very fully considered, and in the demonstration of their composition the nature of atoms and molecules, the processes of distillation and solution, the diffusion of gases, the nature of combustion, flame and oxidation are explained. At this early stage ammonia and its composition and relationships is discussed, followed by the explanation of empyrical and rational formulæ, impressing the student with the nature of those two schemes of composition, carefully guarding him from too great a reliance on the latter.

The chapter on chlorine compounds commences with the nature, preparation, and uses of hydrochloric acid before speaking of chlorine, after which the other compounds of chlorine, followed by bromine, iodine and fluorine. The next chapter, a most interesting and instructive one, is on ozone and antozone, in which the remarkable properties of these modifications of normal oxygen, as far as their occult character will permit, are developed.

The sulphur group is then discussed, in which the nature of the processes of crystallization are explained, followed by the subject of combination by volume as applied to the numerous gaseous compounds previously noticed. Phosphorus, arsenic, antimony and bismuth are grouped together as in close relation to nitrogen. Here toxicological researches bearing on the subject are brought in, and the process of liquid diffusion as developed by Graham under the name of dialysis applied and explained.

The next group is carbon boron and silicon. Under carbon some of the leading subjects in chemical philosophy are brought in; also the properties of charcoal as a disinfecter, absorber, reducer and decolorizer. The authors, in considering the important relations of carbon with organic matter, use the following language: "The best definition of the so-called organic chemistry which can be given to day, is, that it is the chemistry of the compounds of carbon. The department of organic chemistry has grown out of ordinary chemistry solely because of the fact that the compounds of carbon with hydrogen, oxygen, and nitrogen are more numerous, and often of more complex composition than the compounds found by any of the other elements. These compounds of carbon with hydrogen, and with the other elements, are all definite chemical compounds, conforming to the law of multiple proportions; but they count by thousands, and the mere enumeration of their names and properties would fill a volume." Under carbonic acid, respiration, fermentation and ventilation are brought in, and under carbonic oxide, the whole subject of flame, combustion, lamps, furnaces, blowpipes, etc.

The alkaline metals sodium, potassium, and the ammonia salts are in the next group, including alkalimetry, the soda manufacture, saltpetre refining, glass, etc.

Silver is classed with lithium, rubidium, cæsium, and thallium, in which chapter spectrum, analysis and photography are treated of, and that property or tendency of elements to combine with one, two, three or more volumes of hydrogen, which is now understood by the generic term quantivalence, and the specific terms *univalence*, *bivalence*, *trivalence*, *etc.*

Calcium, strontium, barium and lead are a group—magnesium, zinc and cadmium, another; aluminium, glucinum, chromium, manganese, iron, cobalt, nickel and uranium are brought together as the *sesqui-oxide* group, having certain properties in common but varying in others. The alums are here brought in.

Copper and mercury; titanium and tin, molybdenum, vanadium and tungstenum; and finally gold and the platinum metals, with some concluding remarks on atomic weights, specific heat and chemical manipulations in the form of an appendix.

The book is handsomely printed and carefully proof-read, and is a very creditable addition to our chemical literature.

An introduction to Pharmaceutical Chemistry, by John Attfield, Ph. D., F. C. S., Prof. of Practical Chemistry to the Pharmaceutical Society of Great Britain. London: John Van Voorst; pp. 477, 12 mo.

This is a period fruitful in books on chemistry. Formerly these works, appearing at long intervals, embraced the whole scope of the science, but now-a-days we have them adapted to manufacturing, physiology, toxicology, analysis, medicine and pharmacy. In the instance before us the object of the author is to teach general chemistry practically with a view to its use by the pharmaceutical student, quite a different sense from that of "Wittstein's Pharmaceutical Chemistry," which teaches the best processes, in the author's opinion, for preparing Pharmaceutical Chemicals, and in our opinion is as fairly entitled to the adjective as the volume of Dr. Attfield, which is really an introduction to practical chemistry in its relations with the education of the pharmaceutiist, being intended primarily as a text book for students in the laboratory of the Pharmaceutical Society at London, and as an aid in the study of chemistry by the pupils of medical practitioners and chemists and druggists.

The style of the work is unique. The familiarity of the author with what he would teach is apparent at every step; beginning with the characters of the most important element, he carries the student on until he is presumed to have acquired a certain definite idea of the chemical qualities of matter, when combination and atomicity is considered, and the language of symbols discussed sufficiently to enable the students to understand formulæ and equations. The etymology of standard words of classical origin is carefully explained in course, and the new terms, of which many have crept into use in latter times, are duly explained, such as *quantivalence* and its relatives *equivalence, bivalence, quadrivalence, etc.* The author endeavors from the first step to give the student clear ideas of synthesis and analysis, and under each element treats of its synthetical and analytical reactions under separate heads, and claims for this method a decided advantage in teaching the chemistry of the pharmacopœia. Whenever a medicinal chemical is treated of the author brings in the officinal names of preparations derived from it, in italics.

The acids are considered after the metals and salts, instead of before, as is usual, commencing with hydrochloric acid and other hydrogen acids, and proceeding through both mineral and organic acids which have known radicals, and then to those of less importance. Short notices of the more important alkaloids and modes of testing for them are given; then follow the starchy, saccharine and neutral active principles, alcoholic bodies, &c.

The last quarter of the volume is devoted to toxicological analysis, the examination of morbid urine and calculi, and to quantitative analysis, both volumetric and gravimetric, prefaced by a notice of weights, measures, and specific gravity. A series of questions for the use of students concludes the book.

As a text-book for the practical laboratory, and for home students who wish to acquire practically a knowledge of pharmaceutical chemistry, this volume will prove very useful, but it is not so well calculated for the study of theoretical chemistry, as usually taught by lecturers in the United States.

Plastics; a new classification and a brief exposition of Plastic Surgery. (A reprint from a report in the Transactions of the Illinois State Medical Society for 1867). By David Prince, M. D. Phila.: Lindsay & Blakiston, pp. 96 octavo.

Plastic Surgery is said to be "that department of *operative surgery* which has for its end the reparation or restoration of some lost, defective, mutilated or deformed part of the body." The various important operations which constitute this department of surgery, very much belong to more recent times, and for want of a general understanding among surgeons in regard to the language used in describing or naming them, the author thinks loss has occurred. In the work before us he proposes to give form and character to the language of Plastic Surgery, and to present what is known of the art in a brief but connected treatise. Those who are able to judge of its merits, speak favorably of its claims as a résumé of the existing state of the art.

Annual abstract of Therapeutics, Materia Medica, Pharmacy and Toxicology, for 1867, followed by an original memoir on gout, gravel and urinary calculi, by A. Bouchardat, Prof. Hygien, &c., to Medical Faculty of Paris. Translated by M. J. De Rossett, M. D., adjunct to the Prof. of Chemistry in the University of Maryland, &c. Phila.: Lindsay & Blakiston, 1868, pp. 314.

Some of our readers may recognize in this volume an old friend in a new dress. Bouchardat's "Annuaire," is now in its 27th year, and embodies a store of valuable information, gathered from the medical and pharmaceuticals journals, chiefly those of the continent. In rendering the quantities of formulæ, as a general rule it will be safer to use the original quantities as they may be intended for extemporaneous use. We observe several variations from this rule to avoid fractions. The book is neatly gotten up, and will afford physicians an annual exposé of the novelties in French therapeutics, chiefly gathered from the journals.

Braithwaite's Retrospect of Practical Medicine and Surgery. Part LVI, January, 1868, American Edition. New York, Townsend & Adams. 1868; pp. 333.

This excellent half-yearly digest of British medical and surgical papers is too well known to need explanation. The volume just received has the usual variety of subjects, and should be on the table of every practitioner. Lindsay & Blakiston, and J. B. Lippincott & Co., are Philadelphia agents.

The Half-Yearly Abstract of the Medical Sciences; being a digest of British and Continental Medicine, and of the progress of medicine and the collateral sciences. Vol. xlvi. July to December, 1867. Philada.: Henry C. Lea; pp. 288.

Contains very much of interest to the physician, and is too well known and appreciated as a standard semi-annual to need other notice than the announcement of its issue.

OBITUARY.—Notices of the Death of Mr. WARRINGTON, of Apothecaries Hall; and Dr. DANBERRY, of Oxford, are necessarily crowded out.

THE

AMERICAN JOURNAL OF PHARMACY.

MAY, 1868.

CRYOLITE.

By Samuel F. Simes.

(An Inaugural Essay, presented to the Philadelphia College of Pharmacy.)

Cryolite, or Kryolite, as it is differently spelt, is a fluoride of sodium and aluminum, of a pale grayish-white, snow-white, or yellowish-brown color. It derives its name from two Greek words: *Κρυος*, cold, and *λιθος*, stone, or ice-stone; its appearance when wet resembling ice, while its insolubility in water makes it allied to stone.

This mineral, which, though so little known at present, is now taking such an active part in the manufactures and arts, is limited, or found only in certain localities. Small and scattered fragments have been found at Miask, in the Ural Mountains, but so rarely as to make it form a rare specimen. Its occurrence in Greenland, the country from which it is obtained in immense quantities, is also limited as to situation, being only thus largely obtained from the mines of Ivigtout, West Shore, South Greenland, on Arsuk Fiord, between Julian's Hope and Fredericks, lat. 61° N., long. 48° W. The main deposit of it here forms a mass about 600 feet in length, and 200 feet in breadth, it being of plutonic origin of unknown depth. In giving a more minute description of its formation I may say, however, that it lies in a bay or cavity, at the base of the marine plateau of the granite hills that rise at a short distance from the edge of the waters of the river.

Like most mineral deposits it lies at an angle (of about 40°), underrunning the granite mountains, the other face descending with the waters of the bay. The shores of the Fiord are very bold, so that no soundings can be had scarcely a vessel's length from shore.

Chemical Composition.

Cryolite, as I before stated, is a fluoride of sodium and aluminum; it will therefore have as its formula ($3Na\ Fl + Al_2\ Fl_3$) sodium 3 equivalents, 2 eq. of alumina, and 6 eq. of fluorine:

$$\begin{aligned} 3Na &= 69 \\ 2Al &= 27{\cdot}26 \\ 6Fl &= 114 \\ \hline & \ 210{\cdot}26 \text{ equivalents.} \end{aligned}$$

As it is found, it is in the form of crystalline mass, having a sp. gr. 2·95, hardness 2·05, or a little more than alabaster. Large portions of it are often found perfectly colorless and pure, and unmixed with foreign matter, while other portions of it contain crystals of spathic iron ore (spathic iron is a carbonate of iron, an ore of iron having a foliated structure, and a yellowish or brownish color), galena or sulphide of lead, copper pyrites with silver, iron pyrites, etc.; all of which, though, are easily removed by mechanical means, and do not take any part in the chemical decomposition or processes to which cryolite is subjected in the arts.

The value—I may say the main value of cryolite, as a source of soda and alumina, is dependent upon the extraordinary purity that attends its proportions when uesd on the large scale in these industrial enterprises. The carbonate and hydrate of soda, when obtained by the ordinary processes, from the decomposition of common salt, are always contaminated with more or less of the foreign salts, remaining undecomposed from the processes through which they pass, or introduced unavoidably as impurities in the ingredients consumed. With cryolite, however, it is different; the decomposition is so simple, the manipulations so few, and the ingredients which are used so pure in themselves, that no difficulty exists in obtaining these chemical products in quantities of hundreds of tons, and in a state of almost absolute purity, that were before considered of impossible attainment in quantities greater than those which could be obtained in an analytical laboratory.

In order to separate the alumina and soda, the following process must be resorted to; and for the extraction of the soda, and the manufacture of its carbonate and separation of the alumina, the so-called dry process is used. This consists first in grinding together under vertical mill-stones or chasers, a mixture composed of one equivalent of cryolite (previously powdered, and sifted through fine wire gauze), along with a little more than 6 eq. of carbonate of lime, or slaked lime. This mixture, which must be an intimate and perfect one, is then exposed in quantities, about 1000 lbs. at a time, to a low red heat in furnaces constructed in a peculiar manner, with double fireplaces, one at each end; the flame from one passing under the hearth, and then uniting with the other, and both together passing over the mixture of cryolite and lime, in order that the heat may be kept uniform throughout the mass. This is then continued for about two hours, though care must be taken to avoid the materials fusing together. The ash thus produced is taken out and allowed to cool, when it is then placed in large iron leach-tanks, with false bottoms, and leached with hot water until all soluble matter is removed. Now the insoluble residue in the tanks consists of fluoride of calcium, 6 eq., which is dried, and has now become an article of great value to metallurgists in reducing gold and other ores, and as a good flux for silicates. The solutions resulting from the leaching processes are collected into large iron tanks, and when mixed together should have the sp. gr. of about 30° Baumé. The solution consists of equal quantities of aluminate of soda, and also either carbonate or hydrate of soda, as one of the other forms of lime have been used.

In order to separate the alumina and convert the soda into the carbonate, the solution is now pumped into large horizontal cylindrical vessels, which are from 40 to 50 feet in length, and are provided with machinery for agitating through their contents a continuous stream of carbonic acid gas, which is the result of the combustion of the coke or pure lime kiln, in which coke is used as fuel. In a few hours the absorption of carbonic acid gas is complete, and the alumina separates in the form of a fine granular powder, which is a terhydrate of alumina. The contents of the agitator are now put into suitable vessels, and then allowed to settle. The clear solution of carbonate of soda having a density of about 31° Baumé, it is then run off into flat pans, and is evaporated more; when about 37° B. it is removed to cast-iron pans to crystallize and form sal soda, or, as it is commonly known, washing soda. Then what are known as the mother liquors are returned again to the pans, and remixed with a new batch of liquor, and again evaporated and crystallized.

For converting the alumina into a sulphate, it is added, in small portions at a time, to a boiling solution of dilute sulphuric acid of about 30° B., until rather more alumina has been used than is sufficient to form the tersulphate of alumina, the chemical formula of which is $Al_2O_3+3SO_3$, having an excess of alumina always present. After boiling for a few hours the liquor is tested, and as it is prepared in the arts to have the proportions of a slightly basic sulphate, these are adjusted so that for each equivalent of alumina present there should be $2\frac{8}{10}$ eq. of sulphuric acid, or $\frac{2}{10}$ of an eq. less than the sulphate, as it exists in common alum. The solution is then allowed to remain at rest for some days, until perfectly clear, when it is decanted into copper vessels, and evaporated until a drop of it solidifies into a hard brittle mass. It is then collected into leaden moulds to cool, when it is packed in boxes or barrels for market.

Sulphate of alumina, as thus prepared, is of a white translucent color, having the hardness and appearance of alabaster. It contains merely traces of iron, and, as before said, there is present in combination also sulphuric acid, as with alumina in common alum. It also contains about 15 per cent. of alumina, or about one-half more than is present in an equal weight of common potash alum. It is on account of its basic properties, and consequent freedom from acid, its small amount of iron, its trifling cost, that by calico printers, sugar refiners, paper makers, &c., it is consumed in immense quantities. Sulphate of alumina of this character can be prepared only from alumina from cryolite, as that prepared from alum, clays, or other sources of alumina, cannot be free from a great excess of acid, which undoubtedly destroys its usefulness for many purposes, and injures it for art. The solution of carbonate of soda, before described, can of course be applied to the manufacture of caustic soda, by heating it with freshly slacked lime, in the ordinary manner practiced with ash and other commercial forms of carbonate, but it is advantageous to use the following modification of the process known as the wet process.

In this mode of manufacture the cryolite is added gradually to a boiling milk of lime, contained in an upright cylinder or agitator, provided with a stirrer attached to a vertical axis. Now in this process, thus employed, about 15,000 lbs. of quicklime are slacked in a large wooden vessel, and thoroughly mixed with enough water to render the mixture fluid. It is then run into the agitator, and boiled by injecting steam. Having come to the boiling point, the requisite proportion of cryolite, in a very fine powder, is added, and the boiling continued until, by testing, the complete decomposition of the cryolite, and the absence of the alumina in solution,. is ascertained. The contents of the agitator are then disposed of upon filters of fire brick, through which the caustic solution is filtered, leaving the fluoride of calcium in a pasty slop upon the filter. This is then treated with hot water, which extracts the soda liquor by displacement. The caustic soda liquor is now evaporated in iron pans up to a density of 28° B., when the concentration is completed in cast-iron kettles, until finally the caustic is fused in quantities of 8000 lbs. each, at a full red heat, and poured into iron moulds to cool and harden. I have learned from parties who are connected with the works of the Pennsylvania Salt Manufacturing Company, at Natrona, near Pittsburg, which company has the exclusive right to import from Greenland this mineral called cryolite, that at their works from 30,000 to 40,000 lbs. of cryolite are thus treated every day. But further, now, the resulting soda is of nearly chemical purity, and I think superior to any otherwise made, hydrate of soda, containing of 84 per cent. actual hydrate, being produced without difficulty; the impossibility of obtaining nearly pure lime readily, free from silicates, &c., being the only obstacle in the way of absolute chemical purity.

The amount of cryolite imported into the United States in 1867 was 8000½ tons, all of which was entered through the port of Philadelphia. The two principal uses to which cryolite is applied in this country are as follows: 1st, the preparation of the salts of soda and of alumina from the sodium and aluminum contained in it; 2d, the manufacture of opaque "white glass," or, as it is sometimes called, "hot-cast porcelain." Having dwelt at some length on its first use, as designated, I will now endeavor to state its second.

The application of cryolite to the manufacture of the new porcelain, or opaque glass, promises to be one of those discoveries, simple in themselves, that at times almost subvert the course of trade and manufacture. From this material (which is simply glass, so far as the mode of working is concerned) is furnished, at less than the cost of the cheapest ordinary white or flint glass, and with the facility attending working common blown or pressed glass, any article of any shape that can be made from glass; exactly resembling the finest French porcelain in appearance and beauty, but far surpassing it, as well as glass, in toughness, strength, and capability of standing sudden changes of temperature. The ingredients used in its manufacture consist of cryolite 10 lbs., white sand 20 lbs., and oxide of zinc 5 lbs.,—the dirty discolored oxide, worth less than half the price of the white oxide of commerce, answering well for this purpose. The fusion of the ingredients is effected at the same heat, and in the usual manner practised in the flint glass factories. In this manner can be made not only the articles ordinarily made of glass or porcelain, but also tiles, mantel-pieces, mouldings, statuary ware, mortars, pill tiles, evaporating dishes, funnels, ointment jars, and in fact any and everything capable of being cast, blown or moulded whilst in a melted state, and at a mere trifling cost.

The business of making these articles from cryolite is as yet in its infancy. One establishment in this city alone, and I believe this is the only one anywhere, is working exclusively on it, consuming from 500 to 1000 tons of cryolite per annum; but its use will necessarily become general, either as a speciality, or in connection with the ordinary white or transparent glass. Having obtained from the factory of this "hot-cast porcelain" several mortars, funnels and evaporating dishes, and tested them fully and satisfactorily, I am able to state that they all have their advantages over the ordinary ware now in use. The mortars presented at all times a much whiter color, and standing more pounding, or trituration, than the wedgewood mortar commonly used; and the evaporating dishes resisting the heat of both the sand and water baths; at the same time being able to purchase them at about one-half the cost of ordinary porcelain. Not only these bulky and useful articles are manufactured, but also the finest parlor ornaments and lamp shades are made, and decorated and finished in a most beautiful manner at the establishment, which is situated in the upper part of Kensington, on York Avenue in Philadelphia.

The Danish Government, by a concession from King Christian IX, dated September, 1864, granted the exclusive right to mine cryolite to the "Cryolite Mine of Handelselshabet," a company organized in Copenhagen. This company contracted with the "Pennsylvania Salt Manufacturing Company" for a minimum supply of 6000 tons yearly, or as much more as they could be able to use, on the continents of North and South America. This year (1867) the Company imported over 8000 tons, and sent out to Greenland during the summer nineteen vessels, having an average capacity of 450 tons, of which two were lost in the ice, and one has probably wintered there. The approach to the coast is always considered dangerous, on account of the immense fields of ice which are in hot weather most likely to be met with, descending from the northern latitudes. These fields of ice consist in part of drift or pack ice, and in part of icebergs, and sometimes form a thick and impenetrable belt of upwards of 80 to 100 miles in width. This ice, however, mainly descends from the eastern coast of Greenland, where at all times the ocean current flowing south is so laden with ice as to render the shore absolutely inaccessible, no access having been had within the past six centuries. If this icy belt was a continuous one during the open season, navigation would be as impossible in the northern latitudes as it is on the eastern coast; but off the western coast of Greenland the wind is from the north, and scatters the ice so that a good navigator, availing himself of the openings, can sail in or out without serious delay. Skill and experience are of course required,—several vessels every year paying the penalty for the want of knowledge or discretion of their masters, by being caught and crushed in the closing ice-packs. No loss of life has occurred as yet in this trade, the ice affording a safe refuge for the crew until they are removed by the Esquimaux, or escape by their boats to the settlement. The open mines of Ivigtout are worked only during the summer season, from May to October, during which time about 150 men are employed. The amount of cryolite now annually consumed in the manufacture of soda alone is about 6000 tons. Over half a million dollars have been invested in the extensive works of the Pennsylvania Salt Manufacturing Company at Natrona, where sal soda, bicarbonate, alumina, &c., are manufactured from this wonderful mineral, cryolite, giving employment to over 500 men. The alumina manufactured there is supplied to the largest makers of alum in this country; and enough can be obtained from 13,440,000 lbs. of cryolite to produce all the alum consumed in the United States. The various manufactures from cryolite have a market value, at present gold rates, of over one and a half million dollars per annum.

Philadelphia, January, 1868.

EXPERIMENTS WITH PAPER FILTERS.

By Charles E. Avery,
Student in the Massachusetts Institute of Technology.

The filter most commonly employed in analytical laboratories is a circular piece of paper folded twice upon itself into the form of a quadrant, and supported on a glass funnel with straight sides. This filter, though commendable in so far as it is capable of supporting the weight of a considerable column of liquid without breaking, is objectionable, inasmuch as liquids cannot pass through it so rapidly as is desirable. Since at almost every point the paper is in close contact with the glass, but little of the liquid can flow off between the filter and the sides of the funnel.

Several schemes have at various times been proposed for opening water-ways between the glass and the paper; the interposition of straws, glass rods and splinters of wood between filter and funnel, as well as fluted funnels and plaited filters are all devices looking to this end.

The advantages of the plaited filter are so great that some chemists prefer to use it, even in quantitative analysis, instead of the common form, in spite of its greater liability to break, and the difficulty of washing the precipitate.

In the laboratory of Profs. Lawrence Smith & Ordway, among the most accurate of American analysts, plaited filters are said to be employed to the almost total exclusion of the plain form.

Another excellent method of increasing the speed of filtration, first suggested in this country by the German chemist, Fleitmann, consists in placing one plain filter within another of coarser fibre; for instance, a fine plain filter of Swedish paper may be placed within another plain filter of coarse German paper, supported, as usual, on a funnel.

In experimenting upon these various forms of filters, it occurred to me to fold the plain qualitative filter in two operations instead of one. In place of folding the filter doubled upon itself down the middle in the usual way, I proposed to turn down on each side of the paper a fold equal to one-quarter of the semi-circle, and then to fold the sectors of 45° arc thus formed back upon themselves.

The filter is then opened without disturbing the folded portions, and placed upon the funnel. In this form the triple side of the plain filter is broken up and the folded portions keep open passages, instead of hindering filtration.

This filter, as tried against the plain form, gave, 1st, 133 : 100. 2d, 111 + : 100. 3d, 205 + : 100.

Two plain filters ran equally in several trials; each was changed into the other's funnel, and No. 1 ran 33 per cent. less than No. 2. No. 1 was dried and folded into my form; remaining in the same funnel, it ran 32 per cent. faster than the other. Both filters were then opened, and showed no tear or weakness when held against the light.

As these filters gave different results in different funnels, I thought I would ascertain the cause. The water seemed to be retarded in its passage by the attraction of the glass; therefore, those funnels having the greater portion of the paper free from the glass would be the best; that is, *a broad-throated funnel, other things being equal, will filter faster than a narrow-throated funnel.*

To test this point I selected two *large* funnels; No. 1 had three times as broad a throat as No. 2. With the first filters they ran:

117 : 100 123 : 100 133 : 100 118 : 100.

The reason for this low difference was found in a thin spot near the point of No. 2.

Other sets of filters gave:

2d set,	292 : 100	318 : 100	
3d set,	288 : 100	335 : 100	
4th set,	300 : 100	burst.	
5th set,	384 : 100	407 : 100	482 : 100
6th set,	242 : 100		

In the last set a porous filter, though off the same sheet as No. 1, was given to No. 2. Throughout the whole series of experiments every fair advantage was given to the weaker party, it being the first filled and the last emptied.

To make assurance doubly sure, I tried filters in like funnels, stopping the pores of the paper at various points. Paraffin applied whilst liquid was the substance first used to prevent filtration.

Two filters were chosen from the same sheet and of as uniform a texture as possible. No. 1 was stopped over one-third the radius from the point. No. 2, all but one-third the radius at the point.

They filtered at nearly the same rate, No. 1 slightly the faster. The paraffin made the paper stiff, and as water does not adhere to it, free passage was allowed between it and the funnel to the water of the upper part of No. 2.

Here we see that one-ninth of the surface of the filter, when free, did as much work as eight-ninths adherent to the glass. The experiment was repeated with glycerin instead of paraffin. No. 1 ran 28 per cent. the faster. It might be objected that glycerin would wash out; so a pap of paraffin and spirits of turpentine was used to repeat the experiments. Each filter, after being painted, was wetted to prevent the spread of the mixture by capillary action. The trials were not sufficiently numerous to find a true mean, but the free point invariably ran the most—from 4 or 5 per cent. excess to 100 per cent. The point was assumed to be a circle one-third the radius of the filter.

I understood the idea of the Fleitmann filter to be this, that, likening a plain filter to a peat bed resting upon an impermeable sub-soil, it might be compared to a porous substratum interpolated between the swamp and the clay bottom.

To test this idea a Fleitmann filter was made and wetted, carefully patting down and smoothing out any irregularities. It was tried against a plain filter which was placed in a funnel with but two-thirds as wide a throat as that of the Fleitmann. It ran 114 : 100; that is, the passages kept open by the elasticity of the paper, the creases and abutting edges liken this filter to tile drainage.

To increase the size and number of passages I tried putting the inner filter into a plaited filter of coarse paper. Changing the filters after each trial, I found this form gave the following results as compared with the plain filter, calling the latter one hundred.

1st trial,	184 : 100	4th trial,	66 : 100
2d “	201 : 100	5th “	170 : 100
3d “	250 : 100		

I afterwards found a thin spot in the plain filter of the fourth trial.

Next a precipitate of sulphate of calcium was tried; the filtrates were as 131 : 100. On weighing the precipitates collected they were as 200 : 100.

This form of filter was abandoned, since it does not filter as fast, is not as strong, takes more time to make and care to use than the form next to be described. It is, however, better than the plain filter as regards speed of filtration, equal to the plaited in this respect and stronger than it.

To admit the use of very broad-throated funnels, the number of outside filters was increased to two; these over-coats were pierced with long narrow apertures running from the point to the circumference.

In the following experiments, the improved filter was tried against the *plaited* form. The improved filter, on account of its great strength, was allowed a funnel with a throat once and a half as broad as that given to the plaited filter. It would have borne one three times as broad.

1st trial	121 : 100	3d trial,	112 : 100
2d "	125 : 100	4th "	115 : 100

The fifth trial was made with a precipitate of sulphate of calcium; the filtrates were 82 : 100. Here the new filter seemed at fault, but on weighing the precipitates collected they were as 140 : 100. The new filter being last filled, got the thicker portions each time, while the plaited filter got the weak top liquor.

The outer jacket is cut by folding the filter as a plain filter and taking out a sliver on each edge; repeating the process increases the number of apertures. If the filters are to be used double, as in broad-throated funnels, the openings should extend nearly to the vertex; if they are used single in common funnels the openings need not extend so far, and the extreme point may be removed.

A thick porous felt might be used for acid liquors as an outer filter. Cotton cloth would serve in alkaline solutions; gun cotton could be used with either. If asbestos cloth could be procured it would probably be the best. It might be cleansed by burning, and would be unaffected by anything likely to be filtered in quantitative analysis, nor would it harm the filtrate when estimations are to be made by permanganate of potassium.

Most coarse filter paper is " stuffed " with mineral matter; such paper must of course be leached in acidulated water before being used for quantitative work, where the filtrate is to be saved.

When the precipitate is dry, the outer filters are thrown away, only the fine inner filter being burned.

Plaited and plain filters were tried in like funnels; calling the plaited filters No. 1, we had:

	I. II.		I. II.
1st trial,	116 : 100	3d trial,	236 : 100
2d "	237 : 100	4th "	136 : 100

5th " with sulphate of calcium precipitate, 231 : 100
the precipitates weighed 166 : 100.

I then tried plain filters off the same sheet against each other in like funnels; usually the results varied but a few per cent., though sometimes much more; the greatest difference noticed was 2 to 1; several times the results corresponded exactly on repeated runs of 500 cubic centimetres.

Experiments were made to determine the difference in efficiency between the single and the triple sides of filters. No. 1, had its triple side covered with paraffin, leaving the single side free. No. 2 had the triple side free, while the single was covered; with paraffin the result was 175 : 100; glycerin was then tried with the result 200 : 100, showing the additional paper considerably retarded the flow:

I thought, since the adhesion of the water to the glass is the cause of slow filtration, I might increase the flow by coating the funnels on the inside with paraffin, to which water does not adhere. No. 1, being coated, No. 2, left clean, I got

	I. II.		I. II.
1st trial,	200 : 100	3d trial,	100 : 100
2d "	84 : 100	4th "	137 : 100

The filters in the third and fourth trials were the same, but the funnels were changed about.

The outside or skeleton filters, above described, may be cut the same size as the inner filter; if much smaller the upper part of the inner filter clings to the glass; if larger a part of the precipitate is liable to adhere to the outer filter, and even with great care a part of the precipitate would creep up and be lost.

Boston, Feb. 1868.

ON THE PHYSICAL CHARACTERISTICS OF THE OFFICINAL POWDERS.

By Clemmons Parrish.

[An Inaugural Essay, presented to the Philadelphia College of Pharmacy.]

The new feature of the Pharmacopœia of the United States, by which powders are classified with reference to their degree of fineness, has not, I believe, been the subject of much experiment with a view to determine the actual physical condition of different drugs when brought to the officinal standard of pulverization.

The Pharmacopœia does not indicate whether a powder of a specific grade is designed to be composed of particles of the designated degree of fineness or coarseness, or is intended to be a mixture of all the powders, resulting from the process, which will pass through the prescribed sieve. It could hardly have been designed that the powders, prepared for percolation, should consist of particles of uniform fineness, although, theoretically, this is the object in view. The experiments upon which the statement is based, that a uniform degree of fineness in powders is essential to the most perfect exhaustion by percolation, have, I believe, all been made with powders of uncertain physical composition.

The investigations detailed in this Thesis have been chiefly directed to ascertain the difference between the results of contusion and those of trituration, and are calculated to prove this obvious diversity, and to throw light upon the subject of pulverization generally. In order to make these experiments correspond to the ordinary conditions of the dispensing store, the apparatus employed were, *first*, a quart iron mortar and pestle of ordinary shape; *second*, a small mill of usual construction, such as are sold for domestic use and commonly used in pharmaceutical stores. The sieves were of the five grades prescribed by the Pharmacopœia, viz.: No. 20, No. 40, No. 50, No. 60 and No. 80, having respectively these number of meshes to the linear inch. They were five inches in diameter, with well adjusted top and receptacle of tinned iron. The drugs were, *first*, gentian, suitably dried before weighing; *second*, the inner bark of wild cherry; *third*, decorticated ginger; *fourth*, ergot; *fifth*, Calisaya bark. The contusion was accomplished in the ordinary way, removing the drug from the mortar to the sieve at intervals, say three times, until the whole quantity experimented with passed the coarsest sieve, care being taken to observe uniformity throughout all the experiments; the sifted portions not being returned to the mortar after once passing through the sieve. In the use of the mill the drug was reduced so as to pass through the coarsest sieve by two or three grindings without previous sifting, the larger drugs being first sliced to adapt them to the mill, and the mill being set to the same point for each operation. The method pursued is believed to be that most practiced in the processes of contusion and grinding as ordinarily accomplished. After obtaining the "coarse powder," U. S. P., passed through the No. 20 sieve, the proportion of the several other grades contained in it was ascertained by successive siftings; in each case the No. 40, No. 50, No. 60 and No. 80 sieves being successively used. The powder passing through No. 40 is the officinal moderately coarse, though containing Nos. 50, 60 and 80 powder; that passing through No. 50 is moderately fine, though containing No. 60 and 80; that passing through No. 60, though fine U. S. P., contains also the very fine, which is not separated until the No. 80 sieve is used.

The results are here tabulated, in the instances of gentian and wild cherry the average of several operations being given; in the others, carefully noted results of one trial:

Table showing the percentage of Powders of the several officinal grades in specimens of "Coarse" (No. 20) Powder, U. S. P.

	No. 20. Average.	No. 40. Average.	No. 50. Average.	No. 60. Average.	No. 80. Average.	Loss. Average.
GENTIAN ROOT.						
Ground	58·0	7·7	5·7	10·1	14.3	4·2
Contused	44·9	12·8	7·1	12·2	20·5	2·5
Swift's Mill	48·0	13·3	9·7	10·2	15·3	3·5
WILD CHERRY BARK.						
Ground	54·4	11·2	9·0	11·0	12·9	1.5
Contused	43·5	8·7	9·6	12·9	22·6	3·7
GINGER ROOT (decorticated.)						
Ground	46·5	26·5	9·8	2·8	1·5	12·9
Contused	49·0	20·5	13·5	5·0	2·0	10·0
ERGOT.						
Ground	81·0	5·8	4·1	2·0	2·5	4·6
Contused	72·1	7·6	6·1	3·8	4·0	6·4
CALISAYA BARK.						
Ground	37·0	25·0	9·1	6·5	21·0	1·3
Contused	17·0	15·0	16·0	14·6	33·3	4·1

It will be seen that the greatest difference in results between grinding and contusion, in the above, is in the case of *Peruvian bark*, the short fibres of which, subjected to grinding, most readily pass into coarse powders, whilst contusion produces a large proportion of a fine dust which will pass through the No. 80 sieve. If the whole had been subjected to contusion until it would pass the coarsest sieve, a still larger proportion of the finer grades would have been contained in the resulting powder. The ordinary method was, however, adopted in this as in the other experiments, the finer particles being three times separated as the contusion proceeded. Wild cherry gives nearly the same difference, more of the finest powder being produced by contusion at the expense of the coarsest, the intermediate grades differing but little in relative weight.

Ginger, by contusion, seems to increase in the proportion of No. 50 and No. 60 powder; its starchy character probably being unfavorable to its ready reduction to "very fine powder." The loss in ginger is greater than in any of the other experiments, chiefly from the fibre, a portion of which failed to pass the coarsest sieve, and may be called "gruffs."

Ergot, which has a corneous and oily character unfavorable to breaking up into fine dust, gives nearly uniform results by either method, the proportion of fine powder being very small, especially in the triturated specimen.

Gentian, of which the average of several experiments is given, furnishes decided evidence of the general fact that the pestle and mortar are more favorable to the production of the finer grades of powders than the mill. In the single experiment tried with Swift's mill the No. 40 and No. 50 powders were in larger proportion than when the small mill was used, but the No. 60 and No. 80 powders are nearly in the same proportion and decidedly less than the results of contusion.

The Swift's mill is not well adapted to use with so small a quantity of material, on account of the great extent of the rough grinding surfaces.

These experiments, though only conclusive upon the one point of the relative preponderance of the finer powders as the result of contusion, tend to show the great diversity of results by the different means of mechanical division, even when applied to the same drug, and especially when applied to drugs of different structure, and prove that the grades of powder indicated by the officinal standard are of only approximate uniformity in physical composition.

The still more important inquiry into the chemical and therapeutical composition of the respective grades, as separated by sifting, which would be a difficult though important inquiry, does not enter into the scope of this essay.

CHLORODYNE.

By Edward McInall, Jr.

(An Inaugural Essay, presented to the Philadelphia College of Pharmacy.)

An empirical preparation called chlorodyne, of which so much has been said during the past few years, originated in England, about the year eighteen hundred and sixty. The one claiming to be original was that introduced by Dr. J. Collis Brown, and since its introduction there have been many imitations, both in Europe and the United States. Among some of the English preparations may be mentioned Freeman's Chlorodyne and Towle's Chlorodyne, all purporting to be original articles, but I think that of Brown has the proper claim to originality.

Owing to the cost of importation and indeed its high price on the other side of the Atlantic, many of our Pharmaceutists have been induced to imitate it.

I have examined the many published formulas, but find most of them in a degree impracticable. The Chlorodyne of Brown is a thick viscid mixture, having a strong chloroformic odor combined with the pungency of capsicum, with a greenish hue.

Now the advantage of being syrupy is, I think, entirely unwarranted. The idea of using glycerine or treacle is to unite the morphia and chloroform more intimately together; but what may the need be, if it can be done without.

Another disadvantage in some of these imitations is the use of oil of peppermint. The liability of mistaking chlorodyne for essence of peppermint, as now directed by our Pharmacopœia, at once suggests the abandonment of the use of peppermint as a flavoring ingredient in so powerful a combination. I was led to make, not an imitation of Brown's, but a preparation in which efficacy and practicability were combined. In the manipulation of pharmaceutical agents it is not imitation so much that should be arrived at, as the correct therapeutical effects.

The mode by which I have made it during the past year is as follows:

Take of Sulphate of Morphia,	grs. lxiv.
Alcohol, 95 per cent.,	f℥ij.
Chloroform Purif.	f℥vj.
Sulphuric Acid,	q. s.
Ext. Cannabis Ind. (Allen's)	ʒss.
Oleoresin of Capsicum,	gtts. xij.
Hydrocyanic Acid, (Scheele's)	gtts. xcvj.

Shake together the sulphate of morphia, alcohol and chloroform, then add the sulphuric acid, shake well until it becomes clear, then add the oleoresin of capsicum, ext. cannabis and hydrocyanic acid.

This, when finished, is a clear, dark green liquid, possessing the acrid taste of capsicum and odor of chloroform. When held to sunlight or artificial light, it has a dark rich claret color. It may be exhibited in doses from fifteen to thirty drops. It has been extensively used by many of our most eminent city practitioners, who prefer it to Brown's in many cases.

I have often heard it stated that one of the principal objections against the use of chlorodyne, is to the fact of it containing ext. cannabis, which, however, appears to be modified in this article by the other constituents.

So much was our preparation admired that, in the space of a year, we had dispensed over one hundred ounces entirely upon prescriptions. There is a preparation made by a leading firm in Philadelphia to which mine corresponds in appearance, but the objection to it is, it deposits a small quantity of morphia upon standing a little time.

I also examined another preparation, made by an assistant of Davenport, the proprietor of Brown's Chlorodyne, which it strongly represents. One serious objection against this was that it was designed to be given in teaspoonful doses. Chlorodyne has become so popular among physicians that, if they should prescribe it, not knowing it was made of this strength, they might be disappointed in its effect. Hence the necessity of having a preparation uniform in its proportions, and practical in its mode of manipulation.

As a valuable remedy chlorodyne has been highly extolled, and in some instances has acted as a specific in epidemic cholera, which is its principal use. Its other medicinal powers are reputed to be anodyne, diaphoretic, antispasmodic and astringent. In prescribing so powerful a substance, physicians should be perfectly familiar with its dose and other properties. Each teaspoonful contains 1gr. sulph. morphia and about half a grain of ext. Indian hemp, and a drop and a half of Scheele's prussic acid, equal nearly to four drops of U. S. Pharm. acid.

ICE; ITS COLLECTION, STORAGE AND DISTRIBUTION.

By H. T. Cummings, M. D.

This substance, from time immemorial, in the countries of the Eastern Hemisphere, an article of luxury, has become one of prime necessity the world over. It enters into almost every house and place of business, contributing its grateful coolness to the water rendered insipid and tasteless by the fervid heats of summer; it operates, by its antiseptic power, in the preservation of meats, vegetables and fruits in a fresh condition, unchanged by the action of salt or brine; it freezes the creams, and cools the mineral water of the confectioner; and aids the pharmaceutist in the condensation of distillates, the preparation of freezing mixtures, and the cooling of suppositories and ointments, and furnishes a substitute of no mean value for distilled water. So varied and important are its uses, and so valuable is it in the operations conducted in the laboratory of the chemist and pharmaceutist, and so extensive the business and capital concerned in its collection and distribution, that a few notes respecting it have not been deemed as misplaced in this Journal.

Fifty or sixty years ago Mr. Frederic Tudor, of Boston, entered upon the enterprise of exporting ice to the West Indies. He encountered the greatest difficulties in starting the business, among which was one which would bring a smile upon the face of any twelve-year-old boy of to-day. It was as difficult to charter a vessel to carry ice then, as it would be now to get one to carry nitro-glycerin, and he was obliged to purchase the vessel he at first employed, in order to show that ice is a safe cargo. For several years he continued operations in the face of difficulty, discouragement, and pecuniary loss, and it was not until twenty years after that he succeeded in making it remunerative. Since then the business has gradually increased, and within the last twenty years the growth has been very rapid, especially in that department devoted to the supply of the home consumption. The amount of capital employed, and the extent of the ice trade in the United States is something enormous. Full statistics are lacking, but occasional notices appear in the current news of the day, which are extremely suggestive. A communication in the New York *Commercial Advertiser*, written by one who appears to know whereof he affirms, estimates the amount laid up for the consumption of the city trade in 1866 at 580,000 tons; and during the past winter a statement appeared in some of the papers, that there was stored for the consumption of 1868, 750,000 tons. The writer is informed that the Knickerbocker, the largest Ice Company of New York, has a million of dollars invested in the business; and from the statements contained in the communication quoted above, the demand for ice will make room shortly for a dozen more like it. These amounts are independent of all that is invested in this trade, and the ice that is laid up in Philadelphia, Baltimore, Boston, and other large cities of the Union; and a little consideration will show that the ice business in the United States ranks in importance with almost any one that can be named.

The winter just gone has demonstrated that the State of Maine possesses advantages, both of climate and locality, which are eminently favorable to the successful gathering and storing of ice, for both domestic and foreign trade. There are several large rivers in this State where access to the ice fields is easy from the ocean, of which we may name the Saco, the Androscoggin, the Kennebec, the Machias, of which the writer has personal knowledge, and the Penobscot, the Union, the Narraguagus and others, concerning which he cannot speak so definitely as to the convenience of access to their treasures. The correspondent of the New York paper above mentioned speaks of ice houses on the Hudson more than a hundred miles from New York, and this has suggested Sebago lake, fifteen miles from Portland, a body of water of great purity, containing over fifty square miles, as a source of ice. But while the Kennebec remains practically inexhaustible, with direct access to large vessels from the ocean, the Sebago Lake Ice Bank is unlikely to be drawn upon, on account of the land transportation requisite to render its discounts available. From Augusta down to Merrymeeting Bay, a distance of more than twenty miles, a wide river affords a field which for quantity, quality, and facility of storage, is unequalled, considering its nearness to the ocean. The Saco, the Androscoggin and the Machias possess these same qualities, but in a minor degree.

The past winter has been unusually favorable for the formation of ice of excellent quality, as attested by the magnificent blocks quarried from the "crystal mine," eighteen to twenty-four inches in thickness, and of a purity and hue which seemed as if borrowed from the azure vault of heaven. Some of cerulean blue, and others of diamond clearness and absence of color. The ice this season is veritably of the "first water." The view of the edges of the ice in the Kennebec, along the shores of which the writer had occasion to pass several times during January and February, as it curled up upon encountering the resistance offered by the banks of the river to its expansion, suggested the idea of a fine opportunity to determine, on a large scale, the coefficient of that expansion by those who have the means and the scientific knowledge for the solution of such problems. But enough of preface.

In dealing with the subject on the present occasion, it is proposed to offer a few succinct remarks upon the mode of collecting and storing this commodity, arranging it on board ship for export, leaving the question of statistics to a future opportunity. In doing this, it will be well to follow the order of operations; considering, *first*, ice houses, their size and construction; second, cutting the ice, and the implements used; third, storing it, by one or two of the methods most employed; fourth, exportation, including the preparation of the ship, and the stowage of the cargo, with such particulars as may naturally occur under the divisions named.

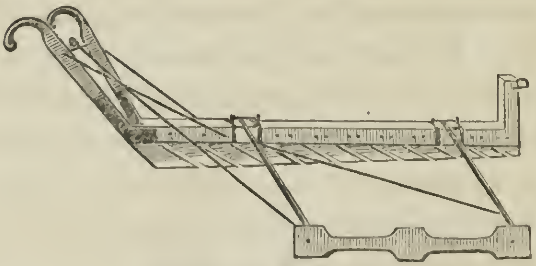
1. Ice Houses.—These vary in size and capacity from two to fifty thousand tons. Allowing forty cubic feet of ice to the ton, the smaller size mentioned would require internal dimensions of one hundred feet in length, fifty feet in width, and twenty-four feet in height to the eaves. Houses for ten to thirty thousand tons are often built in several sections, of these, or even increased dimensions, giving one the idea of half a dozen large barns cemented together at the sides, each section having its own individual roof, reminding one of the board fences one sometimes sees, where the upper edge of the fence is sawn out into pickets, looking like saw teeth. The capacity of the houses is of course determined by the amount of business the proprietor has, or anticipates. Those examined by the writer are, as a general thing, entirely clear in the interior, no space being taken up by beams or ties, or anything which would interfere with the regular filling up of the whole space with ice, or anything which can possibly act as a heat conductor in the summer season. An interesting problem as to the lateral pressure of the ice is, however, suggested by the occurrence mentioned in the Boston *Journal*, of an ice house in the State of New York bursting from the weight of fifty thousand tons; and another query might be raised as to the construction of the house.

The walls of most ice houses are constructed with a double row of stanchions or studs, the interior ones being perpendicular, and the exterior slightly inclined, so that the space between the boarding may gradually diminish from twenty-four inches at the bottom to sixteen at the top. The boarding is put on between the inner and outer stanchions, to secure it from being burst off by the pressure of the filling, and the inner and outer shells are bound together at regular intervals by iron bolts, to prevent them from spreading apart from the same cause. The space thus left is filled with spent tan preferably, but sawdust may be used, or what are called short shavings. The whole is surmounted by a roof with a steep double pitch, and the building is often whitewashed, roof and all, more perfectly to reflect the rays of the sun. One *sine qua non* is, that all round the foundations the whole building shall be perfectly air-tight; not, as one would at first imagine, to prevent the access of air, but to prevent the cold air at the bottom from rushing out, and giving up its place to the comparatively warm air at top, which would endanger the whole stock stored in the house. This, with the requisite doors, and hoisting and storing apparatus, may be taken as the general type of a well-constructed ice house.

All the ice houses seen by the writer are constructed entirely above ground; the underground construction having been abandoned, as a general thing, for the reason that during the summer days the earth absorbs the heat of the sun, and does not yield it up at night, so that, continually absorbing heat in this manner, it is believed that the ice wastes more rapidly by underground than above-ground stowage. The writer already quoted, however, speaks of an ice house built of brick, at Cambridge, Mass., which covers 36,000 square feet of ground, its *vaults* forty feet deep, and its walls four feet thick from outside to inside, enclosing two air spaces. From this it would seem that the question is still an open one.

2. Ice Cutting, and the Implements employed.—When the season has been favorable, and the ice has attained the requisite thickness,—the thicker the better,—the ice men proceed to work. As horse power is much employed, and as ice less than five inches in thickness will not bear the weight of a horse, in an open winter it is sometimes late before the ice cutters can commence operations. If there is loose snow upon the surface of the ice, this is removed for any desired distance by means of a scoop, or sometimes merely a plank set on its edge, which is shod with iron. A space of sixty-six feet square will give 108 dozen cakes. If good, clear ice is reached, the work of marking and cutting commences. If the surface of the ice is in that granular condition known as snow ice, the ice plane is required. Previous to its use the hand plow is run along one side of the space in a straight line, to form a groove, which acts as a point of departure, and regulates the motions of all the implements subsequently employed in cutting the ice. These ice implements are sufficiently difficult to describe intelligibly without the aid of a drawing; but let us make the attempt. The snow scraper, or the scoop, is tolerably familiar to all who have had to clear their sidewalks or streets of snow, and need not detain us.

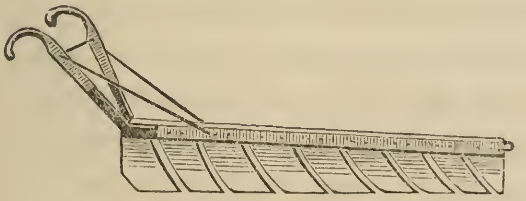
The *hand plow* comes next, as preceding all the others. Let the reader mentally figure to himself a plate of good, tough, well tempered steel, three feet in length, four inches wide at one end, and five and a half inches at the other. The ends are square with the edge, which is uppermost when in use, so that the opposite side alone diverges from a right angle with them. The straight side is strengthened by two bars of iron rivetted on both sides of it, while the other is cut into teeth, by slits, from one-quarter to one-half an inch in width, inclined backwards from the front, and extending entirely up to the stiffening bars above mentioned, so that, when propelled, the teeth present a sharp edge to the ice against which they are pushed, and each tooth being a quarter of an inch deeper than the one which it follows, cuts a groove corresponding in depth, so that the groove made is three and a half inches in depth. To the middle of the upper edge, or what, in analogy with a comb, which it somewhat resembles, might be termed the "back," is attached the handle by which it is pushed forward,—a stiff bar of iron, hinged or rivetted, as the case may be, at the requisite inclination. The lower angle formed by the hinder tooth with the end is usually truncated, thus saving material and weight. [The figure of the large ice-plow will give an idea of the hand plow.—Ed.]



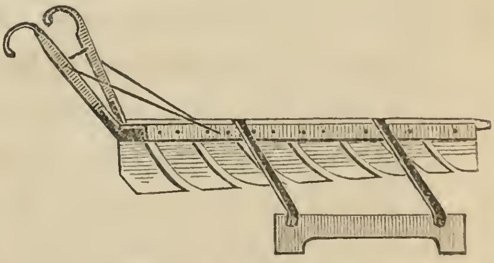
SWING GUIDE MARKER.

Next comes the *swing guide marker.* This implement differs from the hand plow in being considerably larger, having two handles, similar to those of the tools employed in plowing land, set on to the hinder end of the plow. The swing guide, to which it owes its distinctive appellation, consists of a plate of the same steel as forms the cutting part of the plow, attached by two bars to the back, so that it will run parallel with it at twenty-two inches distance (the width of a cake of ice). These bars are so hinged that the guide can be swung instantly from one side to the other, and *vice versa*, at the pleasure of the workman. A staple or hook is provided, for attaching a horse. The preliminary groove having been made by the hand plow, the swing guide marker is brought into use, and, the guide taking the groove, the marker makes a second one parallel with it. Upon turning around at the end of the course, the guide is swung over so as to take the groove last made ; and on the return trip a third is made. This process is repeated until all the grooves required are made, equally distant from, and parallel with each other.

If the ice is in the condition alluded to in the paragraph headed "*Ice Cutting*, &c.," the ice plane is called into requisition. This consists of a frame formed by two guides, set the normal distance apart, so that they will take the grooves made by the previous instrument. Between these guides is set a strong steel blade, capable of adjustment at the will of the workman, set at an angle like that of a carpenter's plane, and which extends from one to the other. A seat for the driver, and a staple for a whiffle, complete the machine. The shaving trimmed off by this plane is three inches thick, and if clear ice is not reached by once going over the surface, a second, third, and even a fourth planing has occasionally been found necessary ; that is, from three to twelve inches in depth has been planed off before sound ice has been reached.



LARGE ICE PLOW.



PLOW AND GUIDE.

The right ice having been reached, the process of *cutting* now commences in good earnest. The hand plow renews its groove, and the swing guide marker follows, until the surface has been marked as before. The large ice plow then follows, and extends the depth of the grooves already made to twelve or fourteen inches. The large ice plow is constructed the same as the hand plow, the difference consisting in its size, the double handles, and the form of the slits dividing the teeth from each other. These slits are curved, with the concavity looking forwards, so that the teeth are actually sharper than those of the hand plow, as the angles between the lower edge and each slit are much more acute. The same operation is repeated now at right angles to the former grooves, and the cakes are ready for separation from each other. The mode of effecting this is probably not uniform. In this city, the largest dealer commences by sawing out one outside row of the blocks, and another adjacent and at right angles to the first. The rows thus cut are slightly bevelled, narrower below than at the top. Before doing this, however, it is necessary to take measures to prevent the water from entering the grooves and freezing therein, thus filling them up. This is done by caulking them with snow, and this is done with an instrument called the *caulking bar*, a bar with a broad chisel-like end, and so made as to enter the grooves, and drive the snow to the very bottom. The two outside rows having been sawed out, the blocks lifted upon the adjacent ice, and the grooves behind the next row of blocks having been caulked as before, a bar called the *breaking bar* is used, generally in pairs, to pry the blocks apart, giving double the purchase attainable with a single one. The caulking process must be used behind every row of blocks to be separated, else the plowing would, on one of our freezing days, prove a Sysiphæan labor, having to be repeated again and again *ad infinitum*. The blocks are now floated, through a channel cut in the ice, to the ice house, which brings us to

3. Storing and Packing.—The blocks once arrived at the house, which is, whenever it is possible, built so that the ice can be floated up to it, is then seized by a huge pair of tongs made specially for the purpose, as the cakes are heavy, weighing three or four hundred pounds apiece, and hoisted up at once where they are wanted. The ice is disposed in regular tiers, the blocks being placed as closely together as possible, though no particular pains is taken to fill up the interstices. This proceeds until the house is filled. One of the most important particulars relates to the covering over all. The material preferred before all others is the long pine shavings of the carpenters. These are cleanly, durable, and not subject to decay, are easily handled with a com-

mon pitchfork, and may be used for more than one filling of the house. The objection to hay or straw is that it is liable to decay, and becomes musty. Sawdust is disagreeable, from constantly sifting down and covering the cakes of the successive tiers, as the upper ones are removed.

One mode of raising the ice from the water, which is considerably practised, is by means of a steam engine operating a species of endless chain. One ice house, situated at the head of navigation on the Saco River, has this apparatus, raising the cakes to the top of an inclined plane, and sending them down another, of half a mile in length, to the house. It is somewhat interesting to note the cakes ascending the slip, and then starting off, as it were, automatically, on their travels for the ice house. As they reach the final incline they encounter the provisions made for checking their momentum. These consist of a series of heavy planks, one end of which is suspended above the track, and the other rests upon it. As the cakes of ice come rushing down the incline, they pass under the suspended end of the plank, and meet the other end, which must be lifted before they can pass. So great is the momentum they acquire, that three of such checks are scarcely sufficient to arrest their motion, and as they enter the house they meet another plank arranged in the same way, but with the addition of a long lever, operated by two men. The ice enters the house at the middle of the side of the first section, and the momentum remaining, after passing three of the planks, is sufficient to carry it through four sections of the house into the fifth, a distance of over two hundred feet. Neither time nor space will admit of details as to the ingenious arrangements for turning it to the right or left in all the sections, but the whole thing is so arranged that the cakes are under complete control, and with ordinary care no accident need occur.

The houses being filled, the proprietors await the summer demand for their commodity, or else proceed at once to load up for tropical markets. The ice which is stored commences to melt at the upper tier, and here is where the greatest waste occurs. The resulting water, percolating through the interstices of the ice, reaches the lower tiers, and, finding a temperature below its freezing point, congeals again, cementing the cakes together in the lower tiers so as finally to form a solid mass, if left undisturbed for a sufficient length of time. An ice house in this city was filled, and left undisturbed for four years. During the fifth year the proprietor, finding his stock of ice running low, examined this house, and found that, by melting, the ice had lowered from twenty feet to four feet in height, and was one solid cake. He was compelled to employ his plows, and get the ice out of it in such pieces as he could ; but it carried him through the season.

4. Exportation.—In the first part of the present paper allusion has been made to the difficulties encountered in the earlier efforts to transport ice to southern and eastern markets. The first cargo was despatched by Mr. Tudor in February, 1806, to St. Pierre, Martinique. He shipped about 130 tons, and of this only *five* tons arrived at its destination ; and this trip was attended with a loss of about $4,500. Details of the different expedients resorted to to avoid this loss would be interesting, but the mention of one must suffice. On one occasion he purchased several large cases of flannels, and endeavored by winding the pieces in and out and around the ice, to protect it from its natural enemy, a high temperature ; but this expedient proved unsuccessful. At length, as ice houses were erected, and the correct principles for their construction were gradually developed, it became apparent that the same principles must obtain in preparing a ship to carry a cargo of ice,—converting it, in fact, into a floating ice house ; and this is the way it is now done.

The first thing is to make an even floor in the hold of the ship, by filling up the furrows, so to speak, each side of the keel, with what sailors term "*dunnage*," consisting of fragments of lumber or ballast of some kind. This gives a tolerably wide floor for the lower tier of ice, which (the floor, not the ice) is covered with a layer of straw or hay, and this again with a thin layer of coarse sawdust or wood turnings. This allows the water from the melting ice to trickle down, and to be removed by the pumps. But as the space at the bow and stern of the ship is necessarily narrow, and would admit of the packing of but one cake of ice in the extreme parts of it, which would be attended with great loss and waste without any compensating advantages, it has been found necessary to erect partitions, or bulkheads, across such parts of the vessel as its particular model shall render advisable, so that from half to two-thirds of all the available space in the ship shall be occupied by the cargo, equidistant between bow and stern. This done, the ship is prepared to receive her cargo.

Moored at the wharf where the ice is to be delivered, the main hatch is thrown open, and a slide or "chute" is constructed from the landing to the hatch. In some cases this "chute" is laid directly from the ice house to the vessel, in others transportation by teams may be necessary. Over the hatchway a windlass is erected, the drum extending entirely across it lengthwise. To this are suspended two "gigs," or iron frames intended to receive the cakes of ice from the "chute," in such a manner as that, while the loaded one descends, the empty one rises. As the cakes of ice come rushing down the chute, they are dexterously directed by the ice-hooks in the hands of the workmen to one side or the other, so as to enter the gigs, which descend with them into the hold. As the lower tier is completed, it is packed all round the sides of the vessel with sawdust. This gives additional space for the next tier, which is wider than the first, as the sides of the vessel recede from the keel; and the tiers, increasing in width until the whole breadth of beam of the ship is attained, are successively packed as described.

In the shipping of ice immense quantities of sawdust are used, so that what the owners of saw-mills used to be bothered with to get rid of, now yields them a handsome revenue. It is estimated that the ice trade of Boston alone consumes sawdust, shavings and rice chaff to the value of $30,000 a year, an item which used to be thrown away. This is suggestive in connection with the injury done to the navigation of the Penobscot river, in this State, by the sawdust, edgings, and other refuse of the mills, which have accumulated in the bed of the river below Bangor. The inquiry would be worth an answer, whether it would not pay in part for the expense of recovering the sawdust, and other material, to dry and sell it. A greatly needed public improvement, it would seem, might be effected at a comparatively small cost to the government. The whole results of the dredging might be made available, partly in this way, and partly as a natural fertilizer of the best quality.

To deliver a cargo of ice to India involves a voyage of sixteen thousand miles, occupying four or five months, during which the equator is crossed twice ; and if one-half the cargo is delivered it is regarded as a success. The loss, is, however, sometimes much greater, even amounting to 75 per cent. On shorter voyages, such as the West Indies, and the southern part of the United States, the loss will not often exceed 33 per cent. of the amount shipped.

It would seem that ice, costing nothing for the raw material, might be furnished at lower rates than is demanded for it; but when the amount of capital and labor employed, in houses, men, teams, horses, tools and machinery, are taken into the account, together with the greatly advanced cost of every item which enters into the business, it will be at once seen that only the utmost care and the most perfect appliances can render operations remunerative enough to induce capitalists to invest their funds, and allow them to continue thus appropriated.

The few remarks thus offered on the subject imperfectly shadow forth one side of this immense department of labor and trade. Northern New England, and Maine especially, has a grand future open before her in this line of commerce. The demand will never diminish, and we may look for a gradual and steady increase, which will make large drafts npon our rivers and lakes. Though for a large part of the year New England is in the "cold," she has summer enough for flowers, fruits and food, and the products of her Arctic season extend their refreshing influences to climes which if in some respects they may be called more favored, in others leave the question open, as to their being so much more to be preferred. Let us borrow the words of the Physician-Poet of the Old Bay State.

"New England ! proudly may thy children claim
Their honored birthright by its humblest name !
Cold are thy skies, but ever fresh and clear,
No rank malaria stains thine atmosphere ;
No fungous weeds invade thy scanty soil,
Scarred by the ploughshare of unslumbering toil.
Long may the doctrines by thy sages taught,
Raised from the quarries where their sires have wrought,
Be like the granite of thy rock-ribbed land—

As slow to rear, as obdurate to stand;
And as the ice that leaves thy crystal mine
Chills the fierce alcohol in the Creole's wine,
So may the doctrines of thy sober school
Keep the hot theories of thy neighbors cool!"

Portland, Maine, April, 1868.

ON SUPPOSITORIES.

BY J. B. MOORE.

Suppositories have, within the last few years, become very important and popular therapeutic agents with the medical profession, and I am only surprised that they are not more extensively and generally prescribed, considering the vast number of cases to which they would be applicable and so highly useful. The demand for them, however, is daily increasing, which renders a thorough acquaintance with the subject of their manufacture one of no little importance to the pharmacist who desires to keep pace with the progress of improvements constantly going on in his profession; and as I have given the matter some attention, I have therefore concluded to give my views and experience upon the subject; and if the hints or suggestions which I shall offer shall prove upon practical application to be of any value to my brethren in the profession, in enabling them to surmount any of the difficulties heretofore attending their manufacture, I shall feel gratified.

In the first place I would state that I use the ordinary metal mould. Those for the rectum I have of three sizes, holding respectively fifteen, twenty-five, and thirty-five grains each of the butter of cacao; the smallest size for children, and the larger for adults. For vaginal suppositories or pessaries I use but one size, which is of two drachms capacity. Preparatory to filling the moulds, I *coat* their inner surface with *finely-dusted* arrowroot or lycopodium, which *effectually* prevents the suppositories, when properly chilled, from adhering to the moulds, which they will otherwise do, and frequently with such tenacity as to render it impossible to dislodge them without warming the mould, which often destroys the beauty of the suppositories, and leaves the moulds in a soiled and greasy condition, troublesome to clean.

I then prepare a *refrigerating* vessel, in the following manner: I fill a pan or dish, or other suitable vessel, with finely broken ice, or water in which a piece of ice is immersed, in which I place the requisite number of moulds, held in their position by a perforated sheet of heavy tin; or, if this is not at hand, a piece of *stiff* pasteboard, or a thick paper box lid with perforations adapted to the size of the moulds, will answer the purpose *temporarily*. But where the apothecary has a large demand for suppositories, and is required to make them frequently and in large quantities, it would be perhaps, if not more convenient, at least more business-like to have a *tin tray*, with perforated lid, for the purpose, which can be had made to order at almost any tinsmith's, for from fifty cents to one dollar.

After the *refrigerating* vessel is prepared and in readiness, and the moulds properly coated, then proceed to prepare and mix the ingredients. In preparing powdered substances for suppositories, they should be brought to as *minute* a state of division as it is possible to reduce them, before admixture with the *excipient*. If this desired state of tenuity cannot be attained without too much time and labor, by process of powdering, the material, if soluble or miscible in water, glycerin or olive oil, may be triturated with a few drops of either liquid until a perfectly smooth and uniform pasty mixture is obtained, although I have rarely found the addition necessary; and suppositories made without the addition of water are usually firmer, and generally more elegant in appearance, more permanent, and less disposed to undergo change of color or decomposition in any of their constituents by time.

If the active ingredient be an extract, and it is in good pilular condition, it needs no further preparation, except thorough trituration *alone* in a mortar, until all rough particles are extinguished, and it has become *perfectly* smooth; but should it have become dry and hard by exposure and neglect, it must be reduced to an *even* pasty consistence, by first working it up well with a few drops of water between the fingers, as the warmth of the hand greatly facilitates the softening of the mass and its admixture with the water. After being thus partially softened, the process may be completed in a mortar.

Alcohol should never be used in the manufacture of suppositories where it can be avoided, on account of its stimulating properties. If ever absolutely necessary in softening resinous substances, as small a portion as possible to effect the object should be employed.

When the medicinal ingredients are duly prepared as above directed, they are then to be *well rubbed in a mortar* with a small portion of the *excipient*, until thoroughly and uniformly mixed; then the remainder of the latter is *gradually* added, and the whole well beat up and incorporated together, as in making pill-mass. This being accomplished, the mixture is transferred to a *capsule* or other suitable vessel, and heated by means of a water-bath at a temperature of about 100°, or not exceeding 120°, with constant stirring during liquefaction, until melted, and a perfectly homogenous mixture is obtained, which should be allowed to cool, and, during refrigeration, to be well stirred until it approaches nearly the consistence of molasses, or as thick a condition as it can be brought, to admit of being poured into the moulds without inconvenience. In this state it will hold the medicinal ingredients in suspension better, and prevent them from settling to the bottom of the moulds, than when more fluid, and thereby insure a more uniform diffusion of the active ingredients throughout the suppositories, which is so important, especially when very powerful or active substances are among the ingredients used. Every care should be exercised to give to each suppository its equal share of activity, and have it equably distributed throughout its substance, in order that, when applied, every part of the mucous membrane with which it may come in contact may receive its *due share* of medication, and which will also facilitate *absorption.*

After the moulds have been placed in their position in the refrigerating vessel, and have remained there about five minutes, or long enough to have become ice-cold or nearly so, the mixture, after being prepared as above directed, may be carefully poured into them, observing to stir it occasionally during the operation; and should it chill too much, and become inconvenient to pour, it must be restored to the proper fluidity by *very gently* warming it again.

The suppositories, after having become sufficiently cold and firm, may be easily removed from the moulds by the gentlest tap of the edge of the latter upon the counter; in fact, the greater number will drop out by simply inverting the mould. Should any of the coating adhere to the suppository after its *delivery*, and should be objectionable, it may be removed with a soft brush or raw cotton.

By this simple expedient of *coating* the moulds with an inert powder, they are made to *deliver* with the greatest facility, which overcomes the greatest difficulty, and effectually removes the most troublesome and annoying feature which most apothecaries have heretofore had to encounter in the manufacture of suppositories. When I first began to have a demand for them, about seven years ago, it was seldom that I had occasion to make them, but at every attempt I was invariably vexed by their persistent adherence to the moulds. So great and annoying was this impediment to the process, that I became completely disgusted with it, and there was nothing that I so much dreaded as to receive a prescription for them, particularly when at a busy hour of the day, and the customer, perhaps, *impatient.* But as the demand increased, and the occasion to prepare them became of more frequent occurrence, I felt compelled to devise some means to remove the difficulty, and after resorting to various methods without avail, I tried the above plan, which I have ever since adopted with uniform and gratifying success. I have communicated the idea to many of my friends in the profession, whose experience coincides with my own.

The method also proposed above, of directly incorporating the medicinal ingredients with the excipient in a mortar, instead of with the latter in liquid state, which is the plan usually adopted, will be found upon trial to possess many advantages. By this latter method good suppositories cannot be made with some substances without unnecessary trouble. Liquor ferri subsulphatis, for instance, when added to melted cacao butter, is not readily miscible, whereas, when incorporated with it mechanically, it afterwards makes, when liquified, a perfectly homogeneous mixture, and shows less tendency to separate. Many instances of this character might be mentioned.

Physicians occasionally prescribe medicines in suppositories which are chemically, if not medicinally, incompatible, especially when mixed together in the presence of moisture. In all such cases the ingredients should each be rubbed *separately* with small portions of the excipient, and then all thoroughly incorporated together with the remainder. The particles of each ingredient thus become separately enveloped in the oily vehicle, and are not only less prone to react upon each other, but do not evince the same tendency to separate and deposit after the mixture is liquified, as when mixed together with water and added to the excipient in the state of fusion. In making suppositories of tannic acid, sugar of lead, and opium, in combination, this method has, I think, peculiar advantages. This plan will also apply to all other combinations of a similar character.

Some druggists, I understand, are in the habit of keeping on hand a supply of plain or unmedicated suppositories of cacao butter, and when they receive a prescription for suppositories they make an opening in the base of the former, in which they introduce the medicinal ingredient and close the aperture. This unpharmaceutical and reprehensible practice should not be countenanced or tolerated by the medical profession.

The bland nature of the butter of cacao, together with its proper consistence, and fusibility at the temperature of the body, seem to pre-eminently fit it as an excipient for suppositories, in preference to any other known substance.

From about the first of October until about the first of June I use it *alone ;* and during the remainder of the year I usually add to it a small portion of wax. The exact quantity of which necessary to use in all cases cannot be named, as that will depend altogether upon the temperature of the season, and the nature and quantity of the added ingredients. For instance, if the latter be a light absorbent powder, such as galls, tannic acid, &c., and in large quantity, little or no wax will be necessary even in hot summer weather; whereas, if a soft extract or other soft material be added, a small portion of wax will be requisite, in the addition of which the operator must be guided entirely by his own judgment; and care must be taken not to add too much, or it will render the suppository too hard and infusible in the rectum, exciting irritation. I have known this to be the case in more than one instance.

The greater number of the suppository moulds which I have met with in the market seem to have been very carelessly made, not unfrequently having deep scratches and other defects in them; therefore care should be taken, in purchasing moulds, to select those which have a smooth and uniform surface, and as free from defects as possible, otherwise they will disfigure and impart a rough and inelegant appearance to the suppository, which will be very mortifying to the operator, who perhaps has taken special pains, with every step of the process, to secure a handsome result, but finds his best efforts in vain. The coating will frequently, to some extent, remedy this difficulty by filling up *slight* defects or inequalities in the moulds.

The *exact capacity* of each set of moulds should be known before attempting to use them, which can be easily ascertained by preparing, in one mould of each set, a plain suppository of cacao butter, and weighing it. Then, in weighing out the excipient for any given number of suppositories, make as nearly as possible proper allowance for the bulk of the medicinal ingredients. There will then be less risk of adding too much of the excipient, and having a portion of the mixture left over after the requisite number of moulds have been filled, which ought to be assiduously avoided, but which will sometimes happen unless the above precaution is observed. If the medicinal ingredients are not bulky, or not in large quantity, scarcely any allowance for their bulk will be necessary; such is the case if morphia, opium, extracts of belladonna, cannabis indica, or many other active remedies which might be named, are prescribed.

Either rectal or vaginal suppositories, of any size, can be made with equal facility by the above process and manipulation. The time required to make a dozen suppositories, under ordinary circumstances, is about thirty minutes; but when *dispatch* is necessary, they *can* be prepared and ready to deliver to the customer in from twenty to twenty-five minutes, when every appliance is at hand. But when it can be afforded, ample time should be allowed for them to remain in the refrigerating vessel to become perfectly hard, so as to admit of all necessary handling without melting between the fingers,—say in winter from five to ten minutes, and in summer from fifteen to twenty minutes.

When properly made, suppositories should have no depression in their base, as it is almost an *infallible* indication that the mixture has not been sufficiently cooled before being poured into the mould. This depression is caused by the shrinking of the mass upon cooling.

The *modus operandi* proposed in this paper for the manufacture of suppositories, is such as I have adopted and thoroughly tested for the last six or seven years, with unvarying success; and the general directions with regard to manipulation will apply to most substances; but there are others, such as the gum-resins, oleoresins, oils, balsams, &c., which will require *special* preparatory treatment before they can be readily made into suppositories, which will sometimes test not only the skill and ingenuity, but the patience of the pharmacist to no small degree. These I propose to make the subject of another essay.

Philadelphia, April, 1868.

BOTANY IN ITS BEARINGS ON PHARMACY.—BOTANICAL GARDENS.

By the Editor.

This is the season for botanical studies, nature is rapidly putting on her garb of beauty after a long winter of unusual severity, and we are pleased to observe that several courses of Lectures on botany have been announced. It is curious that this science, so important to the pharmaceutist, should be so difficult to engraft on his attention. After more than forty years existence our College of Pharmacy has not been able to establish a permanent botanical chair, and this apathy is largely due to the want of an instructional garden where teachers might resort with their classes. At this time Prof. Maisch is giving a gratuitous course to the students of the College, with weekly excursions, and it is to be hoped that ere long botany will become as much a part of the curriculum as chemistry. *Philadelphia needs a botanical garden and arboretum, under the direction of the Academy of Natural Sciences.*

Thirty-five years ago the garden of "good old John Bartram, the King's Botanist," was in existence on the right bank of the Schuylkill, below Gray's Ferry (Philada.); and many a time, when an apprentice, have we walked there to gather information, and to enjoy the shady avenues of that most interesting spot, hallowed as it was by the numerous evidences of his industry, ingenuity and perseverance, and by the noble specimens of his planting which, on every side, stood as monuments to his memory. The only specimen of spigelia our herbarium contained was gathered there, by permission, and numerous indigenous plants, not found in the neighboring flora, there had a dwelling place. This garden yet exists in private hands, but it has long ceased to be a teacher, and, so far as we know, it has no successor. A city of 600,000 inhabitants without a botanical garden! Such a thing in Europe is unheard of, and would not be understood. It is true our professed gardeners have gardens, some of them, with well laid lawns, noble evergreens, exquisite hedges, and green-houses stored with floral beauties; but where are the indigenous annuals or perennial herbaceous plants so numerously scattered over our country? Where can we go as students, to illustrate the natural orders of plants in a living, blooming page, where side by side the several species of a genus may be examined? Alas! nowhere in this vicinity, and, unless in Prof. Gray's garden at Cambridge, we cannot recall a single instance. The industrial gardens of the Shakers, whose efforts are almost solely in the direction of medicinal plants, are without any regard to their scientific relationships.

It may be asked of what use are botanical gardens, except as ornamental appendages to a great city, where the people may resort to pass an idle hour, and admire the exterior beauty of flowers, shrubs and trees? and why may not our parks be botanical gardens? In reply, it may be said that they should, in one sense, be rendered subservient to the culture of a taste for botany. All such trees and shrubs as are available in these public resorts should be distinctly and permanently labelled with the scientific name, and at least one common name, that even the thoughtless and careless may glean as they pass; a germ of earnest action might thus be awakened, by so casual an opportunity to be face to face with the names of these mute representatives of the vegetable kingdom, in the mind of some youthful Linnæus or De Candolle. But this is not what we are aiming at. We want a garden where plants are grown under the auspices of a scientific director, by competent gardeners,—not for sale, not for their beauty merely, but for the illustration of botanical science as a field of study, where, on fitting occasions, our medical and pharmaceutical students may make the acquaintance of those numerous species and important genera on which the sciences of medicine and pharmacy so largely rest,—where the advanced scholars of our public and private schools could resort with their teachers in reasonable numbers, and, under proper regulations, to watch the evolution of plants from blooming to fruition; and where a judicious running discourse, in connection with previous studies, would impress an interest in the unseen beauties of botany, which, more than glaring floral colors, will retain advocates for the science.

Our country is rich in botanical treasures; its indigenous materia medica is extensive and important, but with few exceptions the market is supplied wholly from the natural growth of our woods and uncultivated lands. Already some, as spigelia, senega and serpentaria, have retired far to the west and south, and but for the Sabbath which these lands have had through the direful hands of war, even these sources may have been weakened. To what, then, are we to look for the future supply? How much seed of these plants, for instance, could be found in our seed stores? We venture to say, not an ounce. Yet on their culture must depend the supply of the far future, and it is time that our industrial gardeners, the Shakers, should study practically the problem, and determine how far these and other important indigenous drugs may submit to culture, by studying their habits in the garden. Already Valeriana officinalis is becoming a staple of New England. Why should not the sunny slopes of Tennessee and upper Georgia respond to labor, and produce spigelia and the snake roots? The threatened extirpation of the cinchonas by the recklessness of the cascarilleros has awakened the action of nations to repair the danger. Jalap now demands, and is receiving, similar attention; and Dr. Hooker, in his last report from Kew, speaks of efforts being made to render the supply of columbo more equable, by its introduction and culture in the British colonies.

During the spring and summer of 1867, an opportunity offered to look in on several of the botanical gardens of Europe; beginning with Paris, these were at Naples, Zurich, Munich, Vienna, Dresden, Amsterdam, Brussels, London and Edinburgh. Those of many other cities were passed by for want of time. In all of these the adaptation to scientific study was apparent in the grouping, and whilst hardly any two of them were alike in locality, or in details, they all in greater or less degree accomplished the object of their creation,—viz., the promotion of science by exhibiting living individuals of widely spread genera; and as the seed are carefully saved for distribution, correspondence is kept up among the directors, who are generally professors of eminence in botanical science. The Garden of Plants, as it is called, at Paris, embraces living zoological and botanical collections, as well as museums of zoology and comparative anatomy, and herbariums, and is one vast concentration of scientific material and talent, where every known form of organic life is studied, living or dead. But it is only with its relations as a botanical garden that it is here called in for notice. The "Jardin des Plantes," situated on the south side of the Seine, in the south-east portion of Paris, occupies about 35 acres in all. It lies contiguous to the Ecole de Medicine and the Ecole de Pharmacie, the students of which may have daily access to its borders. The streets which surround it are named from naturalists: Rue Cuvier, Rue Jeffroy St. Hillaire, and Rue de Buffon. The portion devoted to the culture of annuals and herbaceous perennials is laid out in squares, and enclosed with low fencing. The beds are carefully kept, and every species is duly labelled in a way to aid the visitor. The medicinal plants have *red* labels, alimentary plants *green* labels, *blue* those used in the arts, *yellow* for ornamental, and *black* for poisonous plants. It is open at certain hours every day, and all classes of people visit it; some to sit beneath the shady trees to enjoy a passing hour, others to study the plants, whilst very many others are attracted by the menageries situated on the northern side, and which are interspersed among trees and shrubbery in a way at once adding to the comfort of the animals, and the interest and beauty of the arrangements, which are very extensive. Within the grounds, which are enclosed with a high iron railing, are two artificial mounds or hills, one called the Labyrinth, covered with trees, shrubbery, and intricate paths. There is a cedar of Lebanon 134 years old, sent from England by Collinson, which is now nearly four feet in diameter five feet from the ground, and was planted by the elder Jussieu. From the top of this mound a fine view is had to the north and east. The western hill is an arboretum of evergreens embracing a large number of species, and at its southern base is an enclosure where many valuable exotics from Australia, the Cape, and Africa, are kept in warm weather. Nearly 12,000 species are under culture in the garden, and between nine and ten thousand packages of seeds, and nearly as many young trees, are distributed annually to professional hands for culture. On our first visit, in May, the bedded plants were just coming out. Afterwards, in August, almost a drouth prevailed; many of the trees were losing their leaves, and the whole garden had a dingy and dusty aspect, in consequence of the dry weather. The annual expenses are over $100,000.

The garden at Naples is located on Strada Foria, near the poorhouse. It has an excellent collection of trees and shrubs, among which many of our own were noticed with pleasure,—several fine magnolias among them. It is rich in Australian plants, many of which were in bloom, and many intra-tropical trees, including palms; but the garden is badly supplied with water, and at that time dry weather prevailed. The garden is moderate in dimensions, and does not possess very great accommodations under glass. The borders were, however, neatly laid out, and in good order; but it was too early in the season for much display of annuals.

The garden at Berne is new, and under the auspices of the University, Prof. Fischer being the director. It is situated on the north-west side of the city, beyond the Aare, is protected by the railway embankment and has a southern exposure. It is managed with evident interest and energy, and presents many features deserving of notice, among which a pond for aquatic plants may be instanced. Its isolated position, however, causes it to be less frequented by the public than some other gardens.

The space devoted to a botanical garden at Zurich is on the northwestern side of the city, but within its borders. It is not extensive, but includes several green-houses of moderate dimensions. There is an elevation or mound within the enclosure, called the Katz, planted with lime trees on the summit, and shrubbery, etc., on the sides, which was, we believe, formerly a fortification. Several monumental busts of botanists are erected in the grounds. The impression made by this garden was not as favorable as that at Berne; yet there were many exotics, and much to interest the visitor.

At Munich the botanical garden is within the western central portion of the city, one side resting on Karls Platz. It is in the shape of a semicircle, surrounded by streets, enclosed in a railing, with the green houses on the top of the arc, which is towards the north. A large portion is devoted to annuals and herbaceous plants. The supervision of this garden appears to be excellent; everything is in order and well kept, and yet it is almost as much a resort as our public squares. Nurses take their children and sit under the trees; women, with their knitting and sewing, tarry there to enjoy the place, whilst they reflect or gossip, as the case may be. The beds are rectangular, and the plants duly labelled; and students can be seen pursuing their studies. Water is supplied from an open cistern. The shrubbery is arranged around the outer grounds, so as to protect the gardens from winds.

One of the best arranged and most extensive botanical gardens met with in Germany is that at Vienna. It is situated in the eastern suburb of that city, adjacent to the Belvedere, opening on the Renweg-gasse, and, in connection with the extensive ornamented grounds between the old and new Belvederes, which lie beside it, constitutes a plot of many acres in extent. The ground has a gentle inclination towards the west, and is laid out with much less formality than most gardens, the prevailing lines being curves, and a perfect contrast to that of the Belvedere gardens. The variety of trees is quite extensive, many of them American; the higher grounds being given to the arboretum and shrubbery, whilst the portions towards the west, nearer to the front, are beautifully arranged in beds of various shapes, with intervening walks. The beds are of such size that many of them contain only a single genus, as the rhubarbs, the aconites, the lobelias, the mints, etc. The medical plants occupy a special department, which renders them very easy of study, and to medical and pharmaceutical students a great advantage Seats are placed at intervals, the shade being chosen in their location, especially in the upper parts.

The botanical garden at Dresden is small, not far from the palace grounds, but appears to be well stocked, and offers a considerable variety of plants, chiefly annual and herbaceous, as there is not space for trees and shrubbery but to a limited extent.

The culture of flowers as ornaments to public and private gardens is carried to great perfection in Southern Germany. The Volks Garten, in Vienna, in the month of July, 1867, presented a most pleasing spectacle. The winding walks were between beds of the most beautiful flowers, in which the prevailing colors were arranged so perfectly that at a short distance one might fancy it the work of the painter; for the plants are so uniform in size and color, and grow so close, as to present only their beautiful corollas to the view. The small blue lobelia, the wall flower, the heliotrope, the pansy, and various others; and so perfect is the respect for law and property, that they are seldom disturbed by the numerous companies of children who frequent the gardens,—a feature that seems to prevail in continental Europe, and which renders the ornamenting of public grounds easy. The art of gardening is carried to much greater perfection in Europe than with us, and this is shown in no way more forcibly than in the perfect mastery the gardener possesses in shaping trees and shrubs by pruning. Trees are shortened-in in various ways, and it is not uncommon to observe in the public walks trees, the trunks of which are more than a foot in diameter, forced to extend their branches horizontally, so as to make a continuous shade, at the expense of their height. The oriental plane tree, closely analagous in its habits to our sycamore, and the same genus (Platanus), is thus compelled to abandon its ascending habit, and make a lateral growth in the public promenade, so as to get shade without offering much impediment to the wind. The locust (Robinia), both the European and American species, and the white mulberry, are pollarded to great advantage for ornament and shade.

In no instance have we noticed more important results than in the admirable use to which our Virginia Creeper (Ampelopsis virg.) is put, as a cover for screens. It grows luxuriantly, and covers an open upright trellis-work so perfectly as to render it impervious to sight. Screens of this kind are very common in Bavaria and other portions of southern Germany, at railroad stations, near the detached offices. There is also great attention given by railroad officials to the banks, both of cuttings and artificial embankments, to get them in sod; and where the soil is treacherous, and tends to cave, trees with strong running roots, like the yellow locust, are encouraged to grow in some districts. Flower gardens are often made on the banks at the less important stations, and on several occasions the name of the station, in well-formed letters composed wholly of flowers of some bright color, was observed in the well-shorn sod of the banks.

Of course this artificial training is not advocated for parks and other public grounds where space for expansion exists; but where trees must be headed in, it is vastly better to do it systematically, so as to dwarf their tops, than by the unreasonable and unsightly amputations and decapitations which our professed (!) tree-trimmers resort to annually, to disfigure our streets with monuments to their ignorance and stupidity.

The garden at Amsterdam, on the southern side of that city, is of moderate extent, and adjacent to the Zoological Gardens. The existence of such places of scientific culture in so confined a city as Amsterdam, and among so utilitarian a people, shows the general habit of European authorities to encourage such means of attaining knowledge and amusement.

The garden at Brussels is a pentagonal space, completely surrounded by the built-up portions of the city, the longest side of which is on Boulevard de Jardin Botanique. A range of green-houses occupy the highest, or northern side, and the open garden and shrubbery is tastefully laid out in walks and beds,—the eastern end like our Washington Square, the western end less formally. It is much resorted to by the population, and is well kept.

But all these gardens are greatly inferior in extent to those of Kew, near London, which are appropriately named the Royal Gardens, as the whole establishment is supported on the most liberal scale by the Government. Situated on the banks of the Thames, about thirteen miles above London, they have long been under the supervision of eminent botanists, and especially since 1841, when Sir William J. Hooker assumed the directorship, succeeded in 1865 by his son, Dr. Joseph D. Hooker, the present Director. Originally a part of the grounds of Kew palace, eleven acres in extent, the gardens have been enlarged by grant after grant, until at present the scientific portion of the ground embraces 75 acres, adjacent to which are the "pleasure grounds or arboretum," of 270 acres, and other extensive parks. The buildings for botanical purposes are on the most extensive scale. The largest of these is the palm house, or "stove," as it is called, completed in 1848. It is 362 feet long, 100 feet wide in the centre, and 62 feet high. It is constructed of iron work and glass mainly, and contains 45,000 square feet of glazing, has a gallery 30 feet high for visitors to view the palms from above, is heated by hot water by means of tanks and pipes, of which about 24,000 feet are used in the building, distributed under the shelves and floor, and operated by means of vast furnaces under the building, the flues of which are carried underground 500 feet to a stack of chimnies in the square tower, a structure connected with the water supply of the gardens. In this fine building one needs help of but little imagination to fancy himself in the tropics, so completely is the equatorial flora represented. The cocoanut palm, the betel nut, the date palm, the palm oil tree of Africa, the ivory nut tree of New Grenada, the banana and plantain, the bamboo, the banyan fig, the tamarind, the coffee, allspice, pepper, sugar cane, mango and numerous others less generally known, are found, with many smaller plants appropriate to a tropical landscape.

The *tropical house*, No. VII, presents great interest to the pharmaceutist from the number of important medicinal plants it contains, such as aloes, annatto, arrow root, bael, balsam Peru tree, quassia, camphor, theobroma, cinnamon, cloves, ginger, indigo, ipecacuanha, logwood, matico, nutmeg, patchouli, cinchona (four species), sandal wood, sarsaparilla, tonqua bean, and Wintersbark.

Near the centre of the pleasure grounds is "the new temperate house," an immense structure not yet completed, but perfect as far as it goes, and containing a great variety of Australian plants, especially eucalypti and acacias, Chinese and Japanese, New Zealand, Chilian, and East Indian plants. This house, with its octagonal appendages and those yet to be added, will embrace nearly two acres under glass, and brings together a large nmber of important genera.

Besides these, there are special houses for the ferns, the begonias cacti, and the orchideous plants and tropical tree-ferns. There is also a tropical aquarium for water plants, 36 feet in diameter, which has fine specimens of the Victoria regia, nymphæas, etc.

An exceedingly interesting part of the grounds is that laid out in beds, and devoted to annuals and herbaceous perennials, and especially those used in medicine; yet they bear a very small relation in extent to the other portions of the garden. Nowhere else did we see such ample, unlimited room for all purposes, whether the subject was a gigantic cedar or a tiny rhodendron, or a bed of annuals; there is no cramping, as in most of the botanical gardens of the continent, hedged in by the houses and streets. And then the arboretum! Think of 270 acres laid out in walks and avenues, with noble trees drawn from all countries which can be acclimated, planted in generic groups, so that one may see the maples of California and Oregon side by side with those of the Atlantic States and Europe. Very fine oaks, elms, beeches, birches, hickories, and cedars, and a pinetum, with representatives from almost all temperate countries, southern and northern. Besides these living specimens, Kew contains an extensive herbarium, which has grown rapidly of late years. Dr. Hooker, in his report for 1865, speaks of eighty donations, representing in all nearly 100,000 plants from all parts of the world, and especially Brazil and Africa, as having been received. In fact, the herbarium is the largest in existence, and constantly increasing, and, together with the library, forms a great centre of botanical research, where a corps of botanists, to the number of fifty, are permitted to make their investigations.

Another feature due to the late Sir William J. Hooker, are the museums of economic botany, commenced in 1847, the first of their kind established, and by far the most extensive in the world. The universal exhibitions, 1851 and 1862 at London, and 1855 at Paris, gave large accessions to the collection, and we have no doubt it will be increased largely from the vast collections of natural vegetable products in the Paris Exhibition, 1867. "The object of the museums is to show the practical application of botanical science." We can there learn the relations of the vegetable world to man, what our food, timber, and medicines come from, and how much besides a knowledge of flowers and leaves may be derived from a study of botany. There are three museums. In the first and second the products are arranged according to the botanical natural orders, and the first museum includes the products from dicotyledonous plants, the second those from monocotyledons and acotyledons, whilst the third museum is devoted to the specimens of timber and bulky articles, and is largely made up of the products of the British colonies.

The concentration of so much that is beautiful and interesting in nature, arranged with special reference at once to the gratification of the public and the advancement of science, renders Kew Gardens one of the most useful scientific establishments of the many which cluster around the great metropolis of England, and derive their sustenance from the general government.

We cannot close without referring to the garden at Edinburgh, of which Dr. Balfour is director, and Mr. McNab the practical superintendent, as one of the most interesting and well-kept anywhere seen. The palm house is in excellent condition, and claims to be better located than that at Kew, but the grounds everywhere indicated that a master-hand was in charge. We saw the remains of the Narthex assafœtida; it being late in the season (August), only one unwilted leaf remained, and about forty young plants had been raised from seed.

April, 1868.

NON-OFFICINAL FORMULÆ IN LOCAL USE.

A friend in Washington has kindly sent the Editor a little pamphlet volume, of which the following is the *title page:*

Non-officinal formulæ in local use, compiled and published by the joint committee of the Medical and Pharmaceutical Associations of the District of Columbia. Washington, 1867; pp. 32.

This little work is without a preface, or any explanatory note. It is gotten up for the purpose of giving uniformity to a class of preparations that are very liable to vary as made in different shops in the same city, so as to render their prescription by physicians uncertain. The great trouble in such preparations arises from a disposition on the part of pharmaceutists to make them proprietary specialities, and to claim for them a character superior to other preparations of the same class. Now the existence of such a work as the above indicates an *esprit du corps* on the part of the Washington pharmaceutists which is quite commendable. Many of the formulæ are taken from the journals, but, issued in this way, the dispenser is not at a loss in knowing which to use when a prescription is received. The following is a selection of some that we have not before published:

Elixir Cinchonæ, Ferri et Bismuthi.

Take of Citrate of Bismuth and Ammoniæ, four drachms.
Citrate of Iron and Ammoniæ, two drachms.

*Ferrated Tincture of Cinchona, eight fluidounces.
Syrup of Orange-peel, four fluidounces.
Distilled Water, three and a-half fluidounces.
Tincture of Cardamom, four fluidrachms.
Water of Ammonia, a sufficient quantity.

Dissolve the citrate of bismuth and ammonia in the distilled water; add water of ammonia in slight excess; then dissolve the citrate of iron and ammonia; add the ferrated tincture and tincture of cardamom; filter, and add the syrup of orange-peel. Each fluidrachm contains nearly two grains each of the salts of bismuth and iron.

Elixir Chloroformi (Chloroform Paregoric of Dr. Hartshorne.)

Take of Chloroform,
Tincture of Opium,
Tincture of Camphor,
Aromatic Spirit of Ammonia, of each a fluidounce and a-half.
Oil of Cinnamon, twenty minims.
Brandy, two fluidounces.

Mix. Dose, half a fluidrachm or less.

Elixir Ferri Pyrophosphatis.

Take of Pyrophosphate of Iron, three hundred and twenty grains.
Distilled Water, eight fluidounces.
Syrup of Orange peel,
Best Brandy, of each four fluidounces.

Mix.

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* The Ferrated Tincture of Cinchona used in this preparation is made in the following manner:

Take of Calisaya Bark, in moderately fine powder, a troyounce.
Bitter Orange-peel, in moderately fine powder, six drachms.
Serpentaria, in moderately fine powder, one drachm and a-half.
Diluted Alcohol, a sufficient quantity.
Sub-carbonate of Iron, four ounces, or a sufficient quantity.
Boiling Alcohol, a sufficient quantity.
Citrate of Iron (soluble), one hundred and sixty grains.

Mix the powders, and having moistened the mixture with one fluidounce of diluted alcohol, pack it firmly in a glass percolater and gradually pour diluted alcohol upon it, until ten fluidounces of tincture are obtained. Moisten the sub-carbonate of iron with four fluidounces of diluted alcohol, add the tincture; agitate briskly for fifteen minutes; set it aside for 24 hours; test a portion with solution of subsulphate of iron; if a precipitate should form treat it with more of the sub-carbonate, till the tincture tested remains clear; filter, add sufficient boiling alcohol through the filter to make the tincture measure ten fluidounces. Lastly dissolve the citrate of iron in the tincture.

Elixir Picis Liquidœ Compositum.

Take of Wine of Tar,* a pint.
Syrup of Wild Cherry Bark,
Syrup of Tolu, of each four fluidounces.
Rectified Wood Naphtha (methylic alcohol), a fluidounce.
Sulphate of Morphia, four grains.

Mix. Dose, two teaspoonfuls.

Lotio Alba Boracis (nipple wash).

Take of Borax, a drachm.
Boiling Rose-water, a fluidounce.

Dissolve, filter, and add—

Oil of Sweet Almonds, a fluidounce.

Mix well.

Pilulœ Podophyllini Compositœ.

Take of Podophyllum, six grains.
Leptandrin, twelve grains.
Extract of Nux vomica, three grains.
Extract of Aloes, twenty-four grains.

Mix, and make twenty-four pills.

Dose, one to three pills.

Emplastrum Peruvianum (breast plaster).

Take of Lead Plaster,
Plaster of Ammoniac with Mercury,
Soap Plaster, of each two troyounces.
Powdered Camphor, six drachms.
Balsam of Peru, four drachms.
Mercurial Ointment, two drachms.

Mix.

Mistura Hœmostatica (Warren's).

Take of Concentrated Sulphuric Acid, five drachms.
Alcohol, and Oil of Turpentine, of each two drachms.

Add gradually the acid to the turpentine, and then the alcohol, using care.

Vinum Pepsicum (wine of pepsin).

Take of Pepsin, in powder, a drachm and a-half.
Distilled Water, six fluidrachms.
White Sugar, a troyounce.
Sherry Wine, fifteen fluidrachms.
Alcohol, three fluidrachms.

Mix.

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* The Wine of Tar here indicated is made as follows:

Take of Tar, six troyounces.
Carbonate of Magnesia, two troyounces.

Mix thoroughly, and add—

Sherry Wine, four pints.

Digest for ten minutes, and filter, adding sufficient sherry wine on the filter to make the product measure four pints.

PROFESSOR GAMGEE'S METHOD OF PRESERVING MEAT.

The necessity of some plan for preserving meat has long been felt. Hence it is that every plan, as soon as announced, is seized by the anxious public. If we may believe late reports from London, this desire is at last soon to be gratified, and in a manner which will leave nothing desirable unaccomplished. It seems that Professor Gamgee, President of the Albert Veterinary College of London, author of several works upon the cattle plague, and a recognised authority in such matters, discovered a new process for preserving meats, which he has patented in Europe and America. The process is simple and quite inexpensive. The animal, when practicable, is caused to inhale carbonic oxide gas. Before it is quite insensible it is bled in the usual way. When dressed the carcass is suspended in an air-tight receiver, the air exhausted, and the receiver filled with carbonic oxide gas ; a small quantity of sulphurous acid gas is also added. After remaining here for from 24 to 48 hours, meat may be removed, and hung in a dry atmosphere; it will keep for one, two, or three months, or longer, with no preceptible change in taste or appearance. The tests of the method thus far applied have been attended with success. Beef killed in London in March last was sent to New York in June, and as late as the middle of July was shown to a prominent butcher in Fulton market, who did not discover that it was other than ordinary beef, and expressed the opinion that it had probably been killed about two days. Mutton killed in London last July, and sent to this city soon after, is now perfectly fresh, and one piece of beef kept for ten days in a can surrounded by water at a temperature of 90 to 100 degrees, came out perfectly fresh. The process, in the opinion of eminent chemists, does not injure the meat in the least, which is an advantage very difficult of attainment, even in the case of transportation of live stock, which is liable to the bad effects of confinement and the length of the journey. Among the benficial results of the adoption of this scheme would be a better supply in our markets of wholesome meat and at a desirably cheaper rate. It is expected that Prof. Gamgee will soon visit this country for the purpose of inaugurating his project.—*Lond. Chem. News, April* 3, 1868, *from American Journal of Mining.*

ON THE MELTING AND SUBLIMING TEMPERATURES OF THE PRINCIPAL POISONS, ORGANIC AND INORGANIC.

By William A. Guy, M.B, F.R.S.
Professor of Forensic Medicine, King's College, London, etc.

This communication does not exhaust the subject of which it treats. Its aim is to indicate and describe a simple method of procedure by which a new element is added to the natural history and diagnosis of poisons. It is a very obvious development of the method of sublimation described in previous communications to the 'Pharmaceutical Journal;'* and it will be seen to have the special recommendation of applying heat in so gradual a manner as to guard against the chief objection to Helwig's plan still more completely than the modification I have already recommended. It may be well to add, by way of preventing any possible misconception of the object of this paper, that the experiments to which reference will be made are limited to commercial specimens of poisons, and to such of them as are sold as white powders or colorless crystals. For the alkaloids and active proximate principles I am indebted to the Messrs. Morson, —as I am, indeed, for almost all the preparations which I employ. The results of the sublimation of the alkaloids, as obtained from solutions of their salts, and from organic matters, must be the subject of future communications.

If any excuse were needed for the present attempt to confer a more definite character on the test of heat as applied to poisons, it would be found in the fact that already, in all works on toxicology, the results of the rough method of procedure with the spirit-lamp and platinum-foil, or with the spirit-lamp and reduction-tube, are set forth with many of the poisonous substances to which they are deemed applicable. The following may be taken as a fair specimen of the description of these results as obtained with the spirit-lamp and platinum-foil:—

1. *Arsenious Acid.*—Wholly dissipated, as a white vapor, at a temperature of 370°.

2. *Corrosive Sublimate.*—Melts, and is wholly dissipated,

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* See papers on the "Sublimation of Alkaloids," 'Pharmaceutical Journal' for June, July, August, September and October, 1867.

without combustion or being carbonized, in white vapor, without residue. (No indication given that the poison may be sublimed prior to melting, and even without melting.)

3. *Oxalic Acid.*—Melts and is wholly dissipated. (Again no statement that the poison may sublime before melting.)

4. *Binoxalate of Potash.*—Leaves a white ash. (No allusion to the fact that this poison also sublimes.)

5. *Arsenic Acid.*—Not entirely volatilized. (An obviously imperfect description of the effects of heat.)

6. *Acetate of Lead.*—Leaves residue of yellow oxide with reduced metal.

7. *Carbonate of Lead.*—Residue of yellow oxide.

8. *Morphine.*—Melts, darkens, burns like a resin, and deposits carbon. (No indication that the poison partially sublimes before melting.)

9. *Strychnine.*—Melts, and burns like resin, with a black, smoky flame. (No indication of prior sublimation.)

10. *Aconitine.*—Fuses, and burns with a bright yellow flame.

11. *Atropine.*—Melts, darkens, and burns with a yellowish smoky flame.

I will now add an equally short statement of results, described as commonly obtained with the reduction-tube, heated by the flame of the spirit-lamp.

1. *Arsenious Acid.*—Sublimed without melting, forming a ring of brilliant octahedral crystals.

2. *Corrosive Sublimate.*—Melts, and sublimes as prismatic crystals, sometimes stellated.

3. *Oxalic Acid.*—Melts; vapor condensed as white crystalline sublimate.

4. *Acetate of Lead.*—Melts, becomes solid, melts again, darkens, yielding vapors of acetic acid, and leaves residue of carbon and reduced lead.

5. *Tartar Emetic.*—Chars, but does not previously melt. Metal partially reduced. Residue has a grayish-blue metallic lustre.

6. *Morphine.*—As with platinum-foil. Ammonia given off. (No mention of any sublimate.)

7. *Strychnine.*—Also yields ammonia. (No mention of any sublimate.)

8. *Aconitine.*—Evolves vapors, first alkaline, then acid.

These brief extracts, taken from a work which is likely to contain as much information on this subject as is to be found in any one authority,* will serve to show:—1. That two modes of applying heat to poisonous matters are in common use, and are deemed to afford indications of such value as to serve, if not as tests, at least as necessary elements of their natural history; 2. That these methods are either so rough in themselves, or have been used for each poison so rarely that some of the phenomena to which they give rise have wholly escaped observation; and 3. That some more delicate and precise mode of applying heat is still a great desideratum.

Now it is obvious that there would be no difficulty in associating with these rough methods the determination of the temperature at which the several poisons melt or sublime, and equally obvious that out of such association there must inevitably arise such striking differences and contrasts as would serve the purposes both of accurate physical history and of diagnosis. It would suffice to plunge the bulb of a thermometer indicating high temperatures, and a short reduction-tube made of glass of the same thickness as the tube of the thermometer itself, side by side into melting oil, a sand-bath, or even a hollow nipple of copper or brass. The melting and subliming temperatures would thus be ascertained under the necessary conditions of equality of heat, and the sublimates would form in the higher part of the tube. If the tube were made of the glass which presents in section a flattened ellipse, and it were drawn out into a capillary tube, it would be easy to seal the capillary portion at both ends, and examine the contents under the microscope.

But as, by adopting this plan, we should sacrifice the great advantages which obviously arise from substituting a flat surface of glass for the reduction-tube, I did not hesitate to prefer an arrangement which would enable me to ascertain the melting or subliming temperature, or both, with sufficient accuracy for every practical purpose, at the same time that I retained the advantage of the glass disk. The simple apparatus which I devised for this purpose, and which I found to admit of ready application, and to yield very satisfactory results, consists of a plate of copper, with a hollow nipple of the same metal worked into the centre of it, without the use of solder. This nipple receives the narrow bulb of a thermometer indicating all temperatures up to 700° F. The thermometer is supported by a perforated cork fitting a ring of a retort-stand. The apparatus is used as follows:—A minute quantity of the poison or other substance to be examined (say the $\frac{1}{100}$ grain) is placed on a small fragment of microscopic glass, and this on a part of the copper plate, between the centre and circumference. It is then surrounded with a glass ring, on which a clean disk, previously dried in the flame of the spirit-lamp, is placed. The flame of the spirit-lamp is then steadily applied to some point of the copper plate equidistant from the object and the thermometer. The instrument must be placed in a good side-light, and the eye of the observer should be at such a level as to see with equal ease the object itself, the surface of the glass disk, and the scale of the thermometer. To get good results with this simple instrument, the flame of the lamp should be so applied that the temperature may rise steadily and rather slowly, so that each observation made on the substance under examination or on the superimposed disk, may coincide very nearly with temperature indicated. But as the heat imparted to the mercury in the bulb of the thermometer does not immediately travel to the metal in the upper part of the tube, it is necessary to withdraw the lamp directly the change which we are looking for occurs, either in the substance under examination or on the disk of glass. The thermometer will then be observed to rise a few degrees, and the highest point to which it attains should be set down as the temperature (approximately) at which the change in question was perceived.

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* "The Principles and Practice of Medical Jurisprudence," by Alfred Swaine Taylor, M.D., F.R.S., etc.

From this description it will be seen at once that this method is not susceptible of extreme accuracy. When we speak of any particular temperature, as that at which a certain change (as melting or subliming) takes place, we mean the temperature at which, using care and caution, we first perceived a change of form in the substance, or a mist upon the disk. We may miss the precise moment of the change, and make too high an estimate of the temperature. Such errors of observation have been guarded against, in the case of the results presently to be detailed, by repeating the experiment several times with the same substance. Proceeding thus, I have rarely found occasion to correct my first entries of results; and I believe that the method will be found to yield approximations sufficiently close for every practical purpose, if we only adopt the simple and obvious precaution of not attaching importance to differences of a few degrees between the melting or subliming points of two poisonous substances. If, for instance, we experiment with a substance which melts at 220°, and assume it to be codeia, it would be a valid objection that paramorphia and papaverine melt at 210°. So also with aconitia and atropia. A temperature of 140° would not justify us in assuming that we are dealing with aconitia, seeing that atropia melts at 150°. But if we suppose that a minute quantity of a white powder is placed in our hands, and that it *sublimes* at 210°, we know that it cannot be veratria, which *melts* at 200°, or paramorphia or papaverina, which undergo the same change at 210°, or codeia, which melts at 220°. The substance belongs to a wholly different group. It might be muriate of ammonia, which *sublimes* at 210°, or powdered cantharidine, which sublimes at 212°, or even corrosive sublimate, which sublimes at 200°, either not melting at all, or melting at a higher temperature after subliming.

These observations will have prepared the way for a classification of poisonous and other substances, which promises to be of practical diagnostic value. In performing these experiments in the manner indicated, we encounter three leading sets of phenomena:—

1. Sublimation without change of form or color.
2. Sublimation without change of form or color, followed by melting, with or without change of color and further sublimation.
3. Melting and change of color, followed by sublimation.

I now proceed to arrange the principal poisons under these three heads, giving the results obtained with the apparatus as above described.

1. *Sublimation without change of Form or Color.*—This class comprises corrosive sublimate and calomel, arsenious acid and cantharidin, which, if the heat is gradually increased, and then maintained at or near the temperature indicated, are gradually dissipated in white vapor, and leave, if pure, no residue.

This graduated sublimation, therefore, differs somewhat from the quicker process with the spirit-lamp and platinum-foil, which places the four substances in two classes; the one containing arsenious acid and calomel, which do not melt, but are converted into white fumes, without residue; the other corrosive-sublimate and cantharidin, which, as the heat is usually applied, first melt, and then disperse in white vapor, leaving also no residue.

The subliming temperatures of the four poisons are as follows:—

Corrosive sublimate, at or about	. .	200° Fahr.
Cantharidine "	. .	212° "
Calomel "	. .	240° "
Arsenious acid "	. .	280° "

As this temperature of 280°, for arsenious acid, is very low compared to that commonly assigned (370° to 400°), I have carefully repeated the experiments with this poison, and find a distinct sublimate, showing crystals under the microscope at this temperature. To obtain large sparkling crystals a higher temperature is required. I have also obtained sublimates in several reduction-tubes immersed in a sand bath side by side with the thermometer at a temperature never exceeding 300°; and some of these consisted of large sparkling crystals. On referring to works of authority, I find the subliming temperature of arsenious acid variously stated—by Miller and Bloxam at 380°, and in the British Pharmacopœia at 400° (not exceeding 400°). Dr. Taylor places it at the low figure of 370°. All these figures much exceed the temperature indicated in my own experiments; and, as the small quantities which I employed cannot account for the discrepancy, I am at a loss to explain it. I ought, perhaps, to state that, in the experiments with the small reduction-tubes, I used fragments of solid arsenious acid, none of which could have exceeded a grain in weight.

If this first group were enlarged so as to embrace substances which yield sublimates resembling somewhat those of one or other of its members, it would include muriate of ammonia, which sublimes at or about 210° Fahr., and yields a sublimate which might be confounded with the less defined forms of arsenious acid. The most successful sublimates of muriate of ammonia consist wholly of cubes. Sublimed from platinum-foil, it first crepitates, and is then dissipated in white fumes.

2. *Sublimation without Change of Form or Color, followed by Melting with or without Change of Color and with further Sublimation.*—This class includes the three poisons—*oxalic acid, morphia and strychnia.* The first (oxalic acid) sublimes, then melts, and is dissipated without residue. The second and third (morphia and strychnia) first yield sublimates, then melt and darken, continue to sublime, but leave a distinct layer of carbon. These changes take place at the temperatures indicated below:—

Oxalic acid sublimes at or about 180°, melts at or about 280°
Morphia " " 330°, " 340°
Strychnia " " 345°, " 430°

3. *Melting, Change of Color and Sublimation.*—This class comprises all the poisonous alkaloids and glucosides, except the members of class 2,—morphia and strychnia. Their melting and subliming temperatures are given below, arranged in the order of their melting temperature, beginning with the lowest:

Aconitia melts at or about 140°, sublimes at or about 400°
Atropia " " 150° " " 280°
Delphinia " " 150° " " 300°
Veratria " " 200° " " 360°
Brucia " " 240° " " 400°
Digitalina " " 310° " " 310°
Picrotoxia " " 320° " " 320°
Solania " " 420° " " 420°

I add a statement of the melting and subliming temperatures of the members of the opium-series:—

Meconina melts at or about 120°, sublimes at or about 180°
Narceia " " 170° " " 430°
Paramorphia " " 210° " " 320°
Papaverina " " 210° " " 310°

Codeia	melts at or about		220°	sublimes at or about		220°
Narcotina	“	“	240°	“	“	310°
Cryptopia	“	“	350°.	“	“	350°

All these substances, it need not be stated, yield, like morphia and strychnia, a more or less abundant carbonaceous residue, by which the alkaloids and glucosides are distinguished from most other bodies. To these distinctive characters that of giving out a marked odor, in some cases agreeable, in others offensive, ought to be added. As the result of repeated careful experiments, both with platinum-foil and the porcelain slab, I give the following:—Strychnia, pleasant but not easy to describe; morphia and atropia, as of singeing; brucia, as of burnt horn; aconitia, not disagreeable, but ill-defined; veratria, mousy and irritating to the nostrils; digitalina, as of the drug; solania, as of roast apple.

On comparing class 2 with class 3, it will be obvious that, with common care in applying heat, it would not be possible to confound the two important alkaloids, morphia and strychnia, with any other known poisons. A white powder or crushed crystal, which first sublimed at 330°, or from that to 345°, melted at some higher temperature, and continued to yield sublimates till it left a final carbonaceous deposit, must be either morphia or strychnia. If both changes happened at the lower temperatures indicated in the table, it would be morphia; if at the higher, strychnia. The peculiar white disks developed in the sublimate are common to the two alkaloids, and the forms of the sublimates might also not prove characteristic. Hence it might be necessary to resort to the color test or the carbazotic-acid test, to render the diagnosis certain. A glance at the tables will show that many of the alkaloids or glucosides melt and sublime also at temperatures so low as not to admit of being confounded with either of these important poisons.

It will be observed that some of the poisons in class 3 (digitalina, picrotoxia, and solania, in the first group, and codeia and cryptopia, in the second) have appeared to melt and sublime at the same temperature. They have seemed to melt and then sublime, with a scarcely appreciable interval.. As there is not apparently even the small difference of 10° shown in the case of morphia, they have been grouped as above. Of solania it may be stated that it darkens, and grows almost black, before it melts.

I will now give brief notices of other experiments made with the apparatus above described, and then bring the paper to a close by presenting a tabular form, embracing the principal poisons which we encounter as white powders or colorless crystals.

1. *Oxalate of ammonia* yields sublimates at 280°, and is wholly dissipated by heat.

2. *Binoxalate of potash* yields sublimates at 280°, and leaves a white ash.

Camphor sublimes at 150°.

Cyanide of Mercury begins to sublime at 320°.

Oxide of antimony sublimes slowly and scantily at 480°.

Tartar emetic decrepitates at 380°, sublimes slowly and scantily at 480°, and chars at about 550°.

Sulphur melts and sublimes at 180°.

The volatile metals crushed into coarse powder sublime as follows :—

Arsenic . . .	at 230°
Selenium . . .	“ 350°
Cadmium . . .	“ 480°
Tellurium . . .	“ 500°

Table showing the approximate results, for the principal poisons, of sublimation at ascertained temperatures :—

		Temperature.	
			Sublime.
1. Sublime without change of form or color, yielding white vapor.	Corrosive sublimate . . .		200°
	Cantharidina		212°
	Calomel		240°
	Arsenious acid		280°
		Sublime.	Melt·
2. Sublimes, then melts, without change of color, and is wholly dissipated.	Oxalic acid . . .	180°	280°
3. Sublime, melt and yield carbonaceous residue.	Morphia . . .	330°	340°
	Strychnia . . .	345°	430°

			Sublime.	Melt.
4. Melt, change color, sublime, and deposit carbon.	Aconitia		140°	400°
	Atropia		150°	280°
	Delphinia		150°	300°
	Veratria		200°	360°
	Brucia		240°	400°
	Digitalia		310°	310°
	Picrotoxia		320°	320°
	Solania		420°	420°
5. Decrepitates, sublimes slowly and scantily, and chars.	Tartar emetic	380°	480°	550°

—*Lon. Pharm. Journ.*, *Feb.*, 1868.

ON THE CULTIVATION OF AND TRADE IN ROMAN CHAMOMILE.

The Roman or noble chamomile (*Anthemis nobilis* L.), which grows wild in the mountain meadows of Southern Germany, is largely cultivated in the district lying between Leipzig and Altenburg. The village of Kieritzsch is particularly noted, and in the neighborhoods of Zwenkau, Roetha, Borna, Lucka, Gaschwitz, Gaulis, Spahnsdorf, Lippendorf, Trachenau, &c., it has also been grown by many farmers with advantage.

The young plants, previously taken off as layers, are planted in April or May, in such manner that around each one there is about a square foot of space. In favorable weather the plant grows quickly and spreads regularly over the soil, so that the whole field becomes evenly covered; the flowers appear upon the shoots in such numbers, that a field of chamomile in the season of blooming looks as though it were covered with a white cloth, provided the weather is favorable. The blossoming begins in July, and lasts until autumn, so that the gathering of the flowers can be continued until that time. The culture consists in carefully pruning the plants, as long as the space is not entirely overrun by them—and after that, simply in weeding. An uniform summer temperature agrees best with the plants; too wet a season produces too luxuriant a growth, to the disadvantage of the blossoms; even in a continued drought, if other circumstances are favorable, the blossoms are produced abundantly.

In the larva of a beetle (*Elater segetum*) the chamomile have an enemy, which by eating into the root causes its death.

The pulling of the flowers is accomplished very rapidly, as the flower-heads are very easily separated from the stalks, and by simply plucking they can be gathered almost entirely free from the pedicels.

The price varies greatly in different years, ranging from 1 to 20 newgroschen per pound of dry flowers. The usual price is from 4 to 6 newgroschen. The trade in them is carried on chiefly through Madgeburg and Hamburg with Portugal, Spain, Italy, Greece, Turkey, Syria, Egypt, the East Indies, and North America. It yields a profit of more than 300 per cent. In 1865, in consequence of the outbreak of the cholera in the South of Europe, and the extraordinary demand occasioned thereby, the producers received 40 thalers per hundred-weight for a good article, and certain growers, by reason of the favorable weather, obtained about 200 thalers per acre clear profit.—*Wittstein's Vierteljahr.* Oct., 1867.—G. J. S.

AQUA NICOTIANÆ.

By J. S. Unziker, M.D., Cincinnati.

Take of fresh green tobacco leaves eight pounds, cut them and add alcohol one and a half pounds; water sufficient; mix and distil eight pounds.

Care must be taken that the leaves do not become heated by being tied up in bundles, as this would impair the preparation and impart to it the odor of tobacco. The leaves should be taken just before the plant begins to bloom, and should then be worked up as soon as possible; for when the leaves once become spotted, the preparation assumes more or less the poisonous effects of dried tobacco, which is not the case if freshly prepared.

This remedy was first introduced in Germany by Dr. J. G. Rademacher, and if prepared as above stated can be given with perfect safety to the smallest child, without any of the injurious effects produced by dried tobacco. From this I judge that nicotin is not developed and communicated to the distillate as long as the leaves are fresh. For the last eighteen years I have used the aqua nicotinæ with the best results in the first stages of pneumonia and fevers generally. It reduces the pulse promptly, the same time acting as a strong diaphoretic, making it especially adaptable to all fevers originating from colds. But where the tongue is dry, or becomes so after taking it—which is rarely the case—it must be omitted. Its action on the spine and cerebellum is also remarkable. In fevers of children, where diarrhœa is present, and the brain more or less implicated, and opiates inadmissable, it gives prompt relief by reducing the fever, promoting the action of the skin, and gradually checking the diarrhœa and removing all cerebral symptoms. The dose for adults if from ℥ss—℥j every hour or two, and may, with advantage, be given in the form of a mixture in combination with nitrate of soda, acetate of potassa or bi-carbonate of soda.—*Cin. Lancet and Observer*, *March*, 1868.

SOLUTIONS OF MORPHIA AND CAFFEIN IN CHLOROFORM.

By Prof. W. Bernatzic, in Vienna.

Prof. Bernatzic communicates the following formula for obtaining a uniform and permanent combination of morphia with chloroform, viz.: three grains of pure morphia are dissolved, with the aid of three drops of strongest acetic acid and the application of gentle heat, in one drachm of strong alcohol (93·94 p. c.), to which, when cold, is added one-half ounce of chloroform. Three drops of this solution have been found to correspond to one grain; hence, thirty drops (ten grains) contain one-tenth of a grain of morphia, which may be considered as an average dose. The efficacy of this solution is undoubtedly due to the morphia mainly, and the dose should be regulated by the amount of the latter. Yet the action of the chloroform should not be undervalued, as it not only directly increases the anæsthetic effect of the morphia, but enhances it also by favoring the absorption of the latter at the seat of application, by reason of its own high degree of diffusibility. Locally applied, the influence of the chloroform is first felt with its undesirable irritating action, but gradually an anæsthetic effect becomes manifest, which neither of these remedies alone are capable of producing.

Most frequently the remedy proved useful in toothache, applied to the gums near the affected tooth rather than to the denuded pulp itself. A wad of cotton saturated with the compound and introduced into the ear, though at first causing painful sensations, assists in removing the pain. The latter means is also serviceable in painful affections of the internal ear. Sometimes the author also used it as a mouthwash, diluted with much water.

In using this remedy internally, it was observed that the frequent disagreeable concomitant effects of morphia, especially nausea and vomiting, were prevented by the chloroform. Hence the combination exerts a peculiarly favorable influence upon painful affections of the stomach and bowels, in the dose of twenty or thirty drops, taken on sugar or in some tea.

Besides the quieting and anæsthetic effect (which has been found to take place in still other affections besides the above named, more rapidly and more completely than by morphia alone), the tendency to sleep which this remedy induces is undeniable, and the latter approaches more nearly to the character of natural sleep than of narcosis.

Although caffein cannot, strictly speaking, be regarded as an anæsthetic, but, judging from its physiological action, should rather be considered as a means of giving impulse to the motor apparatus, yet it cannot be denied that it has proven useful in many cases of neuralgic affection. In certain forms of nervous cephalalgia, especially, it has not alone been palliative, but even effected radical cures. Koschlakoff's investigations (*Virchow's Archiv.*, 1864) have shown that caffein increases the heart's action and the pressure in the arteries, and that its diuretic effect is based upon the increased arterial pressure. The author is disposed to regard hemicrania as a vasomotor neurosis, and, according to this view, does not find it difficult to explain the efficacy of caffein in this disease in harmony with its known physiological action. Upon the sensory nerves caffein seems to exert no direct influence; indirectly, by reflex action, it may indeed cause hyperæsthesia. The combination of chloroform with it in an equivalent dose might therefore aid its effects in the intended direction without interfering with the physiological powers of the caffein.

The formula for this combination is given as follows: Ten grains of caffein are dissolved, with the aid of a gentle heat, in two drachms of strong alcohol, previously mixed with one-half drachm of water; when cooled, two drachms (by weight) of chloroform are added. The preparation is to be protected from the light. Thirty grains of this solution, or seventy-five drops, contain one grain of caffein. It is used by the author in hemicrania, upon the occurrence of premonitory symptoms, in doses of fifteen or twenty drops, at short intervals. An essential adjuvant of the cure or improvement, is a strict adherence to a chiefly animal diet for a longer period, especially by such persons as are affected with chronic lesions of digestion, dyspepsia, colic, constipation, etc.—*Detroit Rev. of Med. and Pharm., Feb.*, 1868, *from Wienner Med. Presse.*

ON A NEW MANUFACTURING PROCESS FOR THE PERPETUAL REGENERATION OF OXIDE OF MANGANESE USED FOR THE LIBERATION OF CHLORINE FROM HYDROCHLORIC ACID.*

By Walter Weldon.

Every process, previous to that to be described in the present paper, by which it has been attempted to regenerate oxide of manganese from the residues of the manufacture of chlorine, has been performed in the dry way, and has thus required considerable time, and has involved not only at least one—more or less troublesome and costly—furnace operation, but also several removals of the material from vessel to vessel and from place to place; every such removal, of course, entailing more or less loss of material. The process, however, which is about to be described is performed in the wet way, and may be completed, even when operating on the largest scale, within as little as one hour. Moreover, all the operations of the process are performed in the same vessel as that in which the oxide produced by it is afterwards employed to react with hydrochloric acid, and from this vessel or still the manganese is never removed, so that it is entirely free from risk of loss by removal; and as it is not subject to any other cause of loss, a charge of manganese, once put into a still, when treated by this process, not only never needs to be replaced, but never needs even to be added to, while it will liberate an equivalent of chlorine every few hours for literally any length of time. The starting-point of any process for the regeneration of the oxide of manganese employed in the manufacture of chlorine, must, of course, be that residue which is known as "still-liquor," being that which remains in the stills when oxide of manganese and hydrochloric acid have been digested together until all the chlorine which the oxide is capable of liberating from the acid has been liberated and given off. When working with a native oxide of manganese, the still liquor contains, in addition to a quantity of protochloride of manganese, equivalent to the quantity of oxide of manganese which has been dissolved, a considerable quantity of free acid, and more or less chlorides of iron and other bases due to the native oxide of manganese being always more or less associated with other oxides. When working, however, with the artificial oxide of manganese produced as is about to be described, the still-liquor contains scarcely anything whatever but protochloride of manganese; and the new process consists simply in first adding an equivalent of lime to this liquor, without removing the liquor from the still, and then blowing atmospheric air through the resulting mixture of protoxide of manganese and solution of chloride of calcium. The white protoxide is thereby rapidly converted into a very dark-colored higher oxide, and when this product has been allowed to subside from the solution of chloride of calcium in which it was formed, and the greater part of that solution has then been drawn off from it, it is ready to be treated with hydrochloric acid, from which it then liberates chlorine, with reproduction of exactly as much protochloride of manganese as was commenced with. From this point the very simple series of operations described is repeated just as before, and so on, over and over again, for any required number of times. The manganese is thus constantly undergoing, always in one and the same vessel, a round of regularly recurring changes of state of combination, by which it passes, first from the state of protochloride to that of protoxide, next from the state of protoxide to that of a higher oxide, capable of liberating chlorine from hydrochloric acid, then back again to the state of protochloride, and so on continually. As regards the richness of the oxide produced by the process above described, sesquioxide is all that one would have expected to obtain by means of it, but it actually yields a richer product than sesquioxide. Sesquioxide of manganese is, practically—at least from a chlorine manufacturer's point of view—a mixture or compound of about 55·5 per cent. (being one equivalent) of binoxide with about 44·5 per cent. (being also one equivalent) of protoxide; while the oxide most frequently obtained by the process above described contains about 65 per cent. of binoxide, which is about the proportion of binoxide that would be contained in a mixture or compound of three equivalents of binoxide with two equivalents of protoxide. The richest native oxide of manganese which chlorine manufacturers have been in the habit of using, contain about 70 per cent. of binoxide; but a native oxide is practically much less valuable, so far as the manufacture of chlorine is concerned, than an artificial oxide containing considerably less oxygen. The reason is, that in order to dissolve a hard, compact, anhydrous native oxide of manganese, it has to be digested with a large excess of acid, resulting in the production of a still-liquor containing a very large quantity of free acid, all of which is practically lost; whereas a recently formed artificial, hydrated oxide, in an exceedingly minute state of division, will dissolve in a bare equivalent of acid, producing a still-liquor containing no free acid at all. Hence, whereas when using a 70 per cent. native oxide, it is rarely found possible to obtain in the free state more than one-sixth of the chlorine contained in the hydrochloric acid put into the stills, an artificial oxide of less even than 60 per cent. will liberate fully one-third of the chlorine contained in the acid put into the stills, and this in far less time, and at a much less cost for labor and fuel, than the native oxide requires for the liberation of half the quantity. The process which I have had the honor to bring before the section, thus, not only substitutes the cost of about seven shillings' worth of lime and three shillings' worth of blowing for every six or seven pounds which the manufacturer of bleaching-powder and other chlorine products has hitherto had to spend upon peroxide of manganese, but also enables him to nearly double his productions of those products from a given quantity of hydrochloric acid.—*Lond. Pharm. Journ., Feb.* 1868.

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* Read before the British Association at Dundee.

ON THE CHARACTERISTICS OF THE DIFFERENT VARIETIES OF CREASOTE.

Although the creasote of coal-oil is often employed in pharmacy as a substitute for the creasote of beechwood, it by no means follows that the two products are identical. An observation made by M. Rust has led to the discovery of a reaction which permits of easily distinguishing between the two creasotes, namely, that creasote from coal forms with collodion a kind of jelly, whilst beechwood creasote produces nothing of the kind.

In Germany, a mixture of this sort is frequently employed for toothache, composed of equal parts of collodion and creasote: it should be gelatinous. Occasionally the product refuses to gelatinize, and this happens in dealing with beechwood creasote; the collodion thickens a little without losing fluidity.

The following are other reactions which serve to assist in characterizing the two species of creasote:—

Beechwood creasote is insoluble in ammonia, and gives with excess of weak potash a turbid solution.

Creasote from coal is insoluble in ammonia in the cold, but dissolves, forming a clear solution upon application of heat. It also gives a clear solution with weak liquor potassæ.

Lastly, with a neutral solution of perchloride of iron, beechwood creasote, dissolved in alcohol, gives a *green* coloration, whilst in alcohol solution of the coal-oil is colored *brown*. With aqueous solutions, on the contrary, creasote does not change color, whilst coal-tar creasote furnishes a blue.

According to an observation of M. Hlasiwetz, true creasote is found among the products of the distillation of guaiacum resin mixed with a homologue, $C_{14}H8O_4$,* which has been named guaiacol. It has been remarked by M. Gorup-Besanez that this latter body is also contained in ordinary wood-creasote in considerable proportion. It is the opinion of several chemists that both these compounds possess the constitution of compound ethers; thus guaiacol is described as oxyphenate of methyl. The empirical formula of creasote is represented as C_{16},H_{10},O_4.

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*C=6.

M. Frisch confirms, in general, the results obtained by M. Gorup. The creasote upon which he operated was a strongly refracting liquid, of specific gravity of 1·0784. It was perfectly soluble in alcohol, ether, bisulphide of carbon, as well as acetic acid. With ammonia, which it dissolved slightly, it gave a bluish-green coloration, which changed to brown. It dissolved oxalic acid and several alkaloids. With potash it gradually became brown, and, on the addition of ether, developed a blue tint, which disappeared on agitation. It boiled steadily at 195° C. (383° F.) With nitric acid it gave picric acid; with hydrochloric acid and chlorate of potash there are formed nacreous scales, consisting of chloranile and bichloroquinone. With sulphuric acid and application of heat it gave, after neutralization with baryta, a sulphosalt,—the sulphophenisate of baryta of Laurent,—soluble in alcohol and crystallizable. In the presence of bichromate of potash this sulphophenisic acid acquires an agreeable aromatic odor.

This creasote also answered to the test alluded to above, by giving with perchloride of iron in alcoholic solution a green color.—*Journ. de Pharm. et de Chimie.—Lond. Pharm. Journ. Feb.*, 1868.

CHEMISTRY OF OIL PAINTS.

Hitherto but very little attention has ever been given to the above subject by our leading chemists, but a work has recently appeared, published by the celebrated Dutch chemist, Mulder, in which a vast amount of useful information on this point is imparted, and much of the mystery oonnected with the chemical action of the different paints is satisfactorily explained. The starting-point of his investigations was an inquiry as to the best material to protect iron from rust. The result has been his rejection of all paints as unlikely to answer the purpose, and his conclusion that coal tar contains the best materials for a protecting coat. The author very completely investigated the nature of paint, and the chemical changes involved in the drying of oils. As regards linseed oil, we are told that the essential constituent is "linolein," a compound of glycerin and linoleic acid. The latter body the author could not obtain quite pure, but he decides that its formula is $HO,C_{32}H_{27}O_3$.* When exposed to air, linoleic acid rapidly oxidises, first to "linoxic acid," a sticky body resembling turpentine. On longer exposure, "lynoxyn" is produced. This is a tough, leathery substance, sharing, we may say, many of the properties of caoutchouc. It is soluble in the same menstrua, and can be vulcanised like india-rubber. It is manufactured in considerable quantities in this country (United States), and is the binding material used to consolidate emery wheels. It forms also the surface of linoleum cloth. According to Mulder, there are two linoxyns, the white and red; the white modification becomes red on exposure to 80° Centigrade, and the red again turns white on exposure to sunlight. The browning of white paint in dark places the author ascribes to the gradual change of white linoxyn into red. Oxidation does not end with the production of linoxyn. It still proceeds to the complete decay of the material, as is seen in very old paint.

One useful result of Mulder's labor is a simple process for preparing a good colorless drying oil. For this purpose it is only necessary to boil linseed oil for two hours with three per cent. of red lead, filter it, and then expose it to sunlight in large shallow vessels, frequently renewing the air above. Another result is a denial of the existence of albuminous and gummy matter in linseed oil, to which are ascribed the slowness of drying of unboiled oils. For these matters Mulder searched in vain, and at last came to the conclusion that they had no existence. Oxides and acetates of lead, he tells us, act as driers, not by precipitating albuminous matters, but by forming a little linoleate of lead, which rapidly oxidises and communicates its activity to the oil.—*Chemist and Druggist, March,* 1868, *from Journ. Chem. Soc. vol. xviii, p.* 117.

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* This agrees with the formula given in Watt's Dictionary, $C_{16}H_{28}O_2$, in which the modern atomic weights of carbon and oxygen are adopted.

ON THE PREPARATION OF UREA.

By John Williams, F.C.S.

Having had occasion to prepare rather large quantities of Urea, I found that the result constantly fell considerably short of what I considered a satisfactory one. This led me to consider if the ordinary mode of preparation could not be improved upon.

The result of my experiments is, that cyanate of lead is better adapted for the purpose than the mixture of salt generally present in solution, when the usual process is adopted. I proceed in the following manner:—

I prepare cyanate of lead by fusing cyanide of potassium of the best commercial quality (containing about 90 per cent. of real cyanide) at a very low red heat, in a shallow iron vessel; red lead is added in the usual manner, by small quantities at a time with constant stirring, so as to prevent the temperature rising too much during the operation. I prefer cyanide of potassium to ferrocyanide for many reasons, but mainly because the temperature can be kept down to the lowest point.

The cooled and finely-powdered product is exhausted with successive portions of *cold* water, the liquid filtered, and nitrate of barium added. Carbonate of barium is thus precipitated. The mother-liquid, treated with nitrate of lead, yields pure cyanate of lead; this can be washed thoroughly, and dried at a gentle heat, and preserved for use. Unlike cyanate of potassium, it is a permanent salt, and could be produced at a moderate price, if required.

To prepare urea, it is simply necessary to digest with sufficient water at a gentle heat, equivalent quantities of cyanate of lead and sulphate of ammonium, filter and evaporate. I have found the result most satisfactory.

The compound ureas may, in like manner, be produced by substituting the sulphates of the compound ammonias for the ordinary sulphate of ammonium; the experiment has been tried and found successful.—*Chemist and Druggist, March*, 1868.

ON LIQUOR BISMUTHI ET AMMONIÆ CITRATIS.

By C. H. Wood, F.C.S.

Through the medium of the advertisement columns of the medical journals Mr. Schacht, of Clifton, has recently cast some disparagement on the Liquor bismuthi et ammoniæ citratis of the new British Pharmacopœia. As this preparation is obviously intended to represent the very elegant solution of bismuth introduced into pharmacy a few years back by Mr. Schacht himself, it becomes a matter of some interest to determine the justice of Mr. Schacht's remarks upon it. Although Mr. Schacht's process has not been published, analysis has shown that the original "Liq. Bismuthi" contains an ammonio-citrate of bismuth, and several methods have been proposed for producing this compound. But most of these have been somewhat complicated and troublesome.

The process given in the Pharmacopœia possesses two great advantages. It is extremely simple and easy of execution, and it furnishes a liquor of perfectly uniform and definite strength. Assuming the materials employed to be pure, it yields a solution of ammonio-citrate of bismuth containing only nitrate of ammonia in addition. We may fairly suppose that the authors of the Pharmacopœia considered this latter salt to be a harmless constituent of the solution, or they would have taken means to exclude it.

In the advertisements I have referred to, however, it is alleged that the Pharmacopœia preparation will contain, in addition to the nitrate of ammonia, "almost invariably arsenic and copper, and frequently antimony, etc." These, it is stated, will be derived from the impurities notoriously prevalent in metallic bismuth.

It must be admitted that the presence of these metals in varying proportions would detract from the value of the Pharmacopœia solution, and constitute an objection to the officinal process. Having prepared several samples of this liquor, operating strictly according to the instructions of the Pharmacopœia, I thought it desirable to examine them carefully for these metallic impurities. When the liquor was prepared from metallic bismuth, *pu-*

rified as the Pharmacopœia directs, I failed to detect either copper, arsenic, or antimony. In no case could I find the last two metals, but in one case I obtained a trace of copper. The liquor which contained it, however, was prepared from metal imperfectly purified, for the fusion with nitre was not carried on sufficiently. It is to be observed that the Pharmacopœia directs the commercial bismuth to be *twice* fused with nitre, stirring the molten mixture for a quarter of an hour each time. Copper is the most abundant impurity of bismuth, and would most readily pass into the liquor prepared from metal containing it. When ordinary commercial bismuth is employed for the preparation of the liquor in place of the purified bismuth ordered, the resulting solution does undoubtedly contain copper, and may contain traces of arsenic and antimony; although the latter is mostly deposited from the nitric acid solution as insoluble antimonic acid, together with at least part of the arsenic as arseniate of bismuth.

Judging from the experiments I have made, I think it is safe to conclude that when the Pharmacopœia instructions are properly carried out, the process yields with the greatest facility a solution of ammonio-citrate of bismuth which is associated only with nitrate of ammonia, and is in other respects pure and trustworthy. But the substitution of commercial for purified bismuth would be an improper departure from the directions of the Pharmacopœia, and would be likely to cause the introduction of objectionable impurities into the preparation. The purification of the metal is an important part of the process.

Although the Pharmacopœia process is a very satisfactory one, I have found it advantageous, in manufacturing this liquor, to depart from the letter of the instructions, and to employ, in the place of metallic bismuth and nitric acid, the crystallized ternitrate of bismuth, as proposed by Mr. Tichborne some years back. This modification of the Pharmacopœia process, while it is in some respects more ready and convenient, happens to afford greater security for the purity of the product. It has the additional advantage also of introducing a minimum and uniform quantity of nitrate of ammonia into the resulting liquor. The crystallized nitrate is readily obtained and easily kept. When bismuth is dissolved in nitric acid, the solution, after concentration, deposits well formed crystals of the ternitrate. These may be drained on a funnel, and dried by exposure to the air on a porous tile, or on white filter paper. They are perfectly definite in composition, having the formula Bi $(NO_3)_3$, $5\ H_2O$, and they undergo no change by keeping. By long exposure to the air they slightly effloresce, but that is all. If the salt be prepared from commercial bismuth, a second crystallization only is required to render it pure. The preliminary purification of the metal may, if desired, be thereby dispensed with. 995·15 grs. of this salt contain 430 grs. of bismuth, and is, therefore, the quantity to be used in lieu of the metal and nitric acid ordered by the Pharmacopœia.

The process I follow is arranged for a gallon of liquor, and is as follows:—

Cryst. ternitrate of bismuth . .	18¼ oz. (av.)
Citric acid	20 oz.
Liq. ammon. fort.	1 pint, (Imp.) or *q. s.*
Distilled water	*q. s.*

The citric acid is dissolved in two pints of the water, and the crystals of nitrate added. They rapidly dissolve, and after a little time a white precipitate begins to form. As soon as the nitrate was dissolved, the ammonia diluted with an equal bulk of water is added, little by little, until the precipitate is dissolved, and the liquid is neutral. The resulting solution is, if necessary, filtered, and diluted to the volume of one gallon.

It will be observed that I employ rather more citric acid than the P. B. orders. This I find to be desirable when the crystals are employed in lieu of the nitric solution.

The quantities for a pint are as follows:—Ternitrate of bismuth 995 grs.; citric acid 2½ oz.; liq. ammoniæ and water *q. s.*

It might have been an advantage if Mr. Tichborne's process had been given in the Pharmacopœia instead of the present one, but this would have necessitated the introduction of the crystallized ternitrate as a distinct preparation, and the authors may have considered that confusion would arise if two nitrates of bismuth were officinal.—*Pharm. Journ., March*, 1868.

BLUE-BLACK WRITING INK.

A correspondent has sent us the following recipe for a blue-black writing-ink, which, he says, answers very well for a copying-ink:—

Take of Aleppo Galls, bruised . . .	5½ ounces.
Cloves, bruised	¼ ounce.
Sulphate of Iron . . .	1½ "
Sulphate of Indigo, in the form of a slightly-acid paste (Sulphindylate of Potash ?)	1½ "
Sulphuric Acid	35 minims.
Rain Water, cold	40 ounces.

Macerate the galls and cloves in 20 ounces of the water for a week ; decant the liquor, and add to the residue of the solid ingredients 10 ounces of the water, with which continue the maceration for four days; then decant as before, and repeat the maceration with the remaining 10 ounces of water for another period of four days. Mix now the whole of the liquors, recovering from the galls all that can be obtained by squeezing them in a cloth, and afterwards filter. To this add first the sulphate of iron, then the sulphuric acid, and lastly the indigo paste. Care must be taken that the indigo does not contain much free acid.—*Lond. Pharm. Journ., March*, 1868.

IMPURITIES IN GLYCERIN.

To the Editor of the Chemical News.

SIR,—The writer of the article on glycerin in *Kunst and Geweberblatt* is correct in attributing the acrid, irritating properties of some glycerin to the mode of preparation ; but I have distilled glycerin which was quite as unsuitable for medicinal or surgical purposes as any spoken of. The volatile fatty acids and ethers, which exist in crude glycerin, are sometimes condensed with the glycerin, and these have very irritating properties.

In the glycerin which is made without distillation, the volatile acids, and ethers exist, but not in the same state as after distillation, the high heat required for this process decomposing them into some modification of their original state.

The great cause of irritation in glycerin which has not been properly prepared, is the presence of oxalic acid and of formic acid ; these are produced by the action of sulphuric acid upon the glycerin, forming the first mentioned acid, and this in its turn acts upon the glycerin, giving rise to formic acid, the irritating properties of which are well known.

The nitrate of silver test I have always considered the most reliable. Glycerin, which shows no reaction with this salt, may be considered suitable for all uses, as it indicates not only the the presence of chlorine or chlorides, but is, as well, reduced by acids which may exist in the glycerin.—I am, &c.

HENRY BOWER.

Philadelphia, January 16th, 1868.

—*Chemical News, Feb.* 7, 1868.

PRESERVATION OF SYRUP OF IODIDE OF IRON.

By THOMAS B. GROVES, F.C.S.

The appearance of Mr. Tilden's paper on the above subject has suggested the publication of the following note of experiments in the same direction made in May, 1865.

Having heard expressed the opinion that syrup of iodide of iron when made from iron filings kept better than a corresponding syrup made from pure iron in the form of wire, it occurred to me that such (supposing the statement to be true) could only arise from the presence, in the syrup, of substance owing their existence to the impurities usually found in the iron from which filings are commonly obtained.

The most prominent of these impurities and those only likely to be concerned in this matter are phosphorus and sulphur, which, when treated in the presence of water, with excess of iodine, form respectively phosphoric and sulphuric acids, according to the following equation:—

$$P+I_5+8HO=PO_5,3HO,5HI.$$

Query, then would either or both of these acids when added to syrup of iodide of iron tend to its preservation, *i. e.* to prevent its acquiring color when exposed freely to the air?

I was the more readily inclined to answer this question in the affirmative from a belief that I had somewhere seen recommended for the same purpose the use of citric acid. (After a long search I have failed to ferret out the paper in which the observation occurred, and am therefore unable to credit the author of the suggestion with the "kudos" due to him.)

I may observe that a strong solution of iodide of iron, prepared with pure iodine and iron in the form of fine wire, invariably reddens litmus paper. Whether it is due to impurities in the iron, or is characteristic of neutrally constituted iodide of iron, not having by me an absolutely pure specimen of iron, I cannot say.

My experiments were conducted by making seven specimens of syrup—from iron wire, best iron tacks, common iron tacks, wire + acid. sulph. dil. ♏ j per oz., ditto + acid. phos. dil. ♏ ij per oz., ditto + acid. phosph. dil. ♏ ij and acid. sulph. dil. ♏ j per oz., ditto + acid. phosph. dil. ♏ viij per oz.

These were placed in partially filled bottles and exposed for some months to diffuse daylight. It was soon apparent that the acidulated syrups had a decided advantage over those not acidulated. The syrup made from best tacks was superior to that made from wire; that made from common tacks was inferior to either; the nature of the acid appeared to be immaterial.

Since then I have settled down to the use of dilute phosphoric acid, of which I add half a fluid-ounce to each pharmacopœia quantity (31 fl. oz.). With that proportion I find the syrup keep perfectly well for any length of time, and without the slightest reference to the bottle containing it being full or only partially full. If I remember right a less proportion does not answer quite so well, and would not meet the case of a country dispenser with irregular calls for the syrup. Purists will, of course, object to this tampering with the Pharmacopœia, so should I perhaps, but I do it *permissu superiorum*. Besides which I may truly say that I have never in the course of dispensing found any reason to regret the presence of the interpolated ingredient.

Before adopting this expedient I used to seal up my stock in six-ounce bottles, which I completely filled with the hot syrup and then tied over with strong and well-soaked bladder-skin. This, after several trials, I found the best mode of excluding the atmosphere.

It is obviously necessary to observe one precaution,—don't add the acid to the syrup before it has completely cooled. Not observing this, I on one occasion found a batch of syrup go utterly wrong from the formation and crystallization of glucose, which, singularly enough, did not make its appearance until the bottles of syrup had been uncorked for a day or two.

I was quite at a loss to explain the *modus operandi* of the phosphoric acid, until it occurred to me to ascertain how the syrup so additioned would bear dilution with water, and how keep when so diluted. Mere dilution did not affect its transparency when the proportion of water to syrup was as seven to one even, but on exposing the mixture in an open vessel to the air, I observed the fluid to gradually deposit a white sediment of perphosphate of iron, until about half the water had spontaneously evaporated; then, and not till then, did it begin to assume the tint of oxidizing iodide of iron.

The coincidence of the disappearance of the phosphoric acid, and the evolution of free iodine, seemed to prove the preservative effect of the acid to be due to the fact that the iron, as soon as it arrives at the state of peroxidation, is at once seized by the phosphoric acid, and the compound thus formed being insoluble in any of the fluids present, the reduction of the hydriodic acid by the peroxide is prevented. We have, of course, still the free hydriodic acid, but in the presence of syrup it is oxidized very slowly, in fact almost imperceptibly.

An experiment will at once prove my hypothesis correct. To a solution of any iodide add a little persalt of iron,—an immediate evolution of free iodine will be the result, according to the following equation:—

$$\text{Fe I} + \text{Fe}_2\text{Cl}_3 = 3\ \text{Fe Cl} + \text{I}.$$

That the iodine is "free" is proved by the readiness with which it is removed from solution when shaken with ether,—an observation first made by Dr. Squire, I believe.

If, however, previous to the addition of the iron salt a little phosphoric acid be added, no coloration takes place until the whole of such acid has first been removed in the form of perphosphate of iron. In order for this latter experiment to succeed perfectly, the iron should be combined with an acid that in the free state has not the power of dissolving perphosphate of iron, —with acetic acid, for instance. The presence of a minute quantity of hydrochloric acid would tend to keep the perphosphate in solution, and coloration more or less would consequently ensue.

According to this view, phosphoric acid is the only acid that can be relied on for the preservation of syrup of iodide of iron, and my first impression as to the utility of sulphuric acid could only have been true in a very limited sense. In the long run, it could not have been otherwise than harmful.—*London Pharm. Journ.*, March, 1868.

ON A WET METHOD OF REDUCING CHLORIDE OF SILVER.

By Dr. Graeger.[*]

There are many methods of reducing chloride of silver with which we are acquainted, but the majority of them are surrounded by difficulties of some kind or another; either the silver recovered is not perfectly pure, or the manipulation of the process is attended with serious loss, or it is impossible for the whole of the chloride to be reduced at one operation. Now, as the reduction of chloride of silver is an operation which has very frequently to be performed, a method whereby these difficulties are overcome will be welcomed with pleasure; and so often have I felt the shortcomings of the methods at present employed, that it has always been my constant endeavor to discover a better and more serviceable mode of proceeding. In making my inquiries, I have always had in view the advisability of seeking for a wet method of reduction, as I regarded the same as the easiest manner of working, and involving less loss of material. The reduction of chloride of silver by means of iron, zinc, or copper in an acid liquid is well known to be an unsatisfactory method, as the product is always found to be contaminated to a more or less degree with the metals employed ; the same result occurs if the chloride of silver is reduced by means of copper in an ammonia solution. At the same time, no mention has ever been made of the employment of zinc to reduce the chloride out of the ammonia solution. I find, however, that by using this metal, silver of a perfectly pure description may be obtained.

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[*] *Neues Jahrbuch für Pharmacie.* We abridge the translation given in the *Photographic News.*

In order to reduce chloride of silver by means of zinc, it is first dissolved in ammonia, and placed in a bottle, and pure zinc in small excess, and in fragments of notable size (so that it may be easily separated after the process of reduction), is then added. The decomposition commences at once, and proceeds so rapidly, especially if the vessel is well agitated, that in the space of three hours, a quarter of a pound of chloride of silver may be reduced ; the duration of the operation depends, however, of course, on the greater or less excess of zinc present in the solution. A certain excess of ammonia will likewise have the effect of accelerating the operation. At first, the precipitated silver assumes a light grey or dirty white color, but towards the end it becomes dark grey, or even black. A few drops of the ammoniacal solution should be examined in a test-tube from time to time, and precipitated with hydrochloric acid ; the operation is at an end when no turbidity is apparent on the addition of the acid. When this is the case, the precipitate is allowed to settle down, and the clear liquid then poured off as completely as possible ; the silver in the glass vessel is treated again and again with fresh water until all smell of ammonia has disappeared, and is then transferred to another bottle by means of a funnel, the tube of which has previously been stopped with a few fragments of glass, to prevent the pieces of zinc from passing through at the same time as the silver particles. The superabundant water is then decanted as completely as possible, and the precipitate treated with concentrated hydrochloric acid, in which it is allowed to digest until the dark grey color has given place to one of a dirty white. If the silver contains much water, it is possible that it may not become white on a single treatment with the hydrochloric acid ; in this case, the liquid must be again poured off, and a fresh quantity of acid added. By this means, the silver may always be obtained of a white color, and when the operation has advanced thus far, the precipitate is repeatedly washed, until the water poured off is only very slightly acid. The silver is then collected on a filter, and well washed with distilled water; finally, a little dilute ammonia is poured on it, and it is again washed with water. This treatment is rendered necessary, in order to remove any minute quantity of chloride of silver which may have been formed by the action of the concentrated hydrochloric acid, the latter sometimes containing small quantities of free chlorine.

The silver produced in this manner is of a very pure description; at any rate, I have never been able to detect the presence in it of any other metal. When dissolved in nitric acid, and precipitated with hydrochloric acid, a fluid is obtained, which, when neutralized with carbonate of soda, does not become turbid by treatment either with ferro-cyanide of potassium or alkaline carbonates. It assumes a brownish color on the addition of sulphide of ammonium, owing to the presence of dissolved chloride of silver, but no precipitate is formed.

The expenditure of ammonia in the operation is, of course, not inconsiderable, but, as the greater portion of it may be recovered by distillation, the actual loss of the same is hardly appreciable. In working with large quantities of chloride of silver, economy may be exercised in the use of ammonia by reducing the chloride in several operations, so that the ammoniacal solution of chlorine and zinc, when freed from the silver, is again used to dissolve the chloride. This appears somewhat strange, but is evidently due, in part, to the presence of free ammonia, which exerts an action upon the chloride of silver only when the silver has been separated. Such a mode of proceeding would, however, occur only when manipulating with a considerable bulk of chloride of silver, for, in reducing small quantities, the necessary amount of water required to dissolve the chloride may easily be added.

In the same way, nitrate of silver dissolved in ammonia may also be reduced with zinc, perfectly pure silver being obtained;

this result takes place even when the nitrate solution contains copper, as is very often the case. The copper, it is true, becomes reduced by the zinc in the ammoniacal solution, but only very slowly as compared with the silver, and hardly at all so long as a certain quantity of the latter is present in the solution. By this means, I have been enabled to separate the whole of the silver from old coins, containing but twenty-five per cent. of that metal. Every particle of silver must not, however, be separated; or, what is the same thing, the quantity of zinc added should be insufficient to precipitate the whole of it. The process possesses the particular advantage, that in order to separate copper from nitrate of silver, it is not necessary to transform the latter into chloride before it can be reduced. The finely-divided silver must, however, be treated in the manner described above, with concentrated hydrochloric acid, and afterwards well washed, to remove the particles of precipitated zinc. For the production of pure nitrate of silver, this method is especially recommended, as by its employment the tedious operations of washing the chloride of silver, and its subsequent reduction in crucibles, are entirely dispensed with.—*London Chemist and Druggist*, March 14, 1868.

DESTRUCTION OF THE GREAT DRAGON TREE OF TENERIFFE.

The great Dragon Tree of Orotava, Teneriffe, the King and Nestor of the Monocotyledons, is no more. A drawing of it made by Mr. Borda, one hundred years ago, was published about 60 years ago by Humboldt, who first drew scientific attention to this vegetable wonder. The late Mr. Webb published, in his history of the Canaries, figures of it taken after the storm of July 21, 1819 had destroyed half its crown; and it has recently been described, measured and photographed by Prof. Piazzi Smyth. He gave the trunk a girth of 48½ feet at the lowest accessible part, and a height of 60 feet. Fenzi of Florence, who announces the demise of the tree, makes the circumference about 78 English feet, but intimates that he was not able to measure it exactly. When he visited it, a year ago, "it was still in excellent health, its immense crown covered with innumerable panicles of scarlet fruits, and the huge trunk, although completely decayed in the interior, sustained vigorously the spreading mass of fleshy branches and sword-like foliage." He charges the destruction of this famous historical monument to the sheer carelessness of the Spanish authorities, who might have prevented it by keeping up sufficient props. That venerable trunk was, it is said, as hollow and about as large in the year 1402 as in recent times; and the hollow had even then been used immemorially by the Guanches for religious rites. The age of 6000 years which has been assigned to it by some of the "most sober naturalists" may not be very greatly exaggerated. Probably even the cavity was as ancient as the oldest of California Redwoods.—*Am. Jour. Sci. and Arts*, March, 1868. A. G.

TEST FOR BROMIDES.

By SURGEON J. H. BILL, U. S. Army.

In conducting some investigations during the past summer, on the physiological relations of the halogens, it became absolutely necessary, in the course of the experiments, to devise a ready and sensitive test for bromine in the presence more particularly of chlorine.

Any analyst will bear out the assertion—although the books make light of the matter—that it is a difficult thing to recognize traces of bromine in the presence of excess of the other halogens. Thus in the case stated above, it was found impossible to obtain, by the ordinary methods of the books, a certain and easy recognition of bromine, when chlorine was present.

The Fresenius test solution of auric chloride produces, in faintly acid solutions of alkaline bromides, a coloration ranging from dark orange red to light straw color, according to the strength of the solution. Iodides must be out of the way. Chlorides, however, do not interfere in the least. The following is the best way of applying the test: Separate iodides by palladium, and after getting rid of excess of palladium, by sulphuretted hydrogen, concentrate the solution to about twenty-five cubic centimeters. Select two test tubes of the same size and shape and color of glass. Into one pour the solution suspected to contain bromide. Into the other pour pure water, adding perhaps a trace of chloride potassium ; add now to each test tube a drop of chlorhydric acid, and then to each *one* drop of auric chloride solution. On now comparing the two tubes, particularly in the direction of their long axes, a yellow color will be observed in the tube containing the bromide, and made very manifest by comparison with the other tube.

The following experiment shows the delicacy of the test applied as above. One centigram of potassic bromide was dissolved in one thousand cubic centimeters of water. Thirty centimeters of this solution compared with thirty centimeters of a very weak solution of potassic chloride, gave a decided yellow color. This experiment was varied by dissolving a gram of potassic chloride in two thousand cubic centimeters of water, halving, and adding one centigram of potassic bromide to the one half. Thirty centimeters of each of the two solutions now tested, gave ample evidence of the presence of bromide.

The mixed chloride and bromide should be brought to the state of salts of the alkalis if necessary, by precipitating with argentic nitrate, thoroughly washing, and fusing with potassic carbonate. If sodic carbonate is used, the subsequent reaction with the gold test is not so decided.

A test for chloride in the presence of bromide, as simple and delicate as the above, is much needed. The writer has sought long for it but in vain.

1607 N. 6th St., Philadelphia, Pa.

—*American Journal of Science and Arts, March,* 1868.

Varieties.

Mercerising Cotton.—To Mr. Mercer must be attributed the discovery of the peculiar action of caustic, soda, and sulphuric acid upon cotton. This singular process, now called " mercerising," has the effect of untwisting the normally twisted flattened tubes of cotton filaments and converting them into cylindrical tubes. When colors are applied to the cotton so treated, they pass more readily through the minute pores of the tubes and are precipitated in denser layers in the interior of the latter, whereby darker and more permanent shades are produced. Calicoes so treated become greatly increased in strength, and though hitherto no large quantities of cloth thus prepared have been printed, owing to the expense of preparation, advantage has been taken of the process to prepare the cotton fabric used in the production of the endless web known to calico printers as the india rubber blanket, which, when made with prepared calico, is rendered much more durable.—*Lon. Chem. News, July* 12, 1867, *from Proc. Lit. Phil. Soc., Manchester.*

A Sodium Catastrophe Averted.—In the course of last winter the river Irwell rose nearly twenty feet above its ordinary level, and flooded the works of the Magnesium Metal Company on the Salford side to a depth of about seven feet in every part. There were then from three to four hundred-weight of sodium in stock, and, soon after the commencement of the flood, the room in which the sodium was stored was two feet deep in water; but, as it rained in torrents, it was then considered best not to run the risk of attempting to move it off the premises. The sodium was stored in long narrow jars, with loosely fitting covers, made air-tight by allowing the bottoms of the lids to rest in a circular groove filled with oil. As the flood did not abate, and the position began to grow more dangerous, one of the men volunteered to go on the roof of the sodium shed and watch the water rise, and for hours he lay upon the roof in a soaking shower of rain, watching the sodium jars Inch by inch the water rose, and at last, when it was only half a foot from the top of the jars, he drew his head out of the the hole in the roof where it had been sticking so long and summoned the rest of the men. They unslated the roof of the store room, let themselves down into the water, now reaching nearly to their armpits, and removed the sodium lump by lump into other vessels placed among the rafters of the roof. By accident one little ingot of sodium fell into the water, causing the courage of the men to falter; but the lump fortunately only fumed and fizzed, and dissolved away without exploding. After the flood was over the Magnesium Metal Company built a platform near the roof, on which all sodium is now stored. We have not heard what bonus the Company voted to the men who removed the sodium, especially to the one who stuck to the top of the roof like a limpet to a rock in a storm, but doubtless it was something handsome.—*Lon. Chem. News, July* 12, 1867, *from British Journal of Photography.*

Simple and Durable Label.—At a late meeting of the Massachusetts Institute of Technology, of Boston, Hon. M. P. Wilder made a statement relative to a new method of labeling trees, accidentally discovered by him. In the use of zinc labels, which were the most durable in character, an indelible ink was used; but, not having the ink at hand on one occasion, he wrote upon the zinc with a lead pencil. This writing, although it could be rubbed when first made, grew more distinct and durable with age, and after several years could not be erased except by scraping.—*Jour. App. Chem., May,* 1867.

Glycerin Lotion for Chapped Hands and Face.—Make a mucilage of quince seeds, by simmering one drachm of the seeds in a half pint of boiling water for ten minutes, and then straining ; of this mix one ounce with an equal quantity of inodorous glycerin, and six ounces of orange flower or rose water. The above is an excellent wash for the hands and face in cold weather, and, compared with many of the lotions sold by the druggists, is quite inexpensive. A little borax may be added to this preparation if desired.—*Jour. Applied. Chem.*

Fossils Preserved in Ice.—About 40,000 pounds of fossil ivory—that is to say, the tusks of at least 100 mammoths—are bartered for every year in New Siberia. As many as ten tusks have been found lying together in the "Tundra," weighing from 150 to 300 pounds each. Notwithstanding the enormous amount already carried away, the stores of fossil ivory do not appear to diminish. In many places near the mouths of the great rivers flowing into the Arctic Ocean, the bones and tusks of these antediluvian pachyderms lie scattered about like the relics of a ploughed-up battlefield. Entire mammoths have occasionally been discovered, not only with the skin—which was protected by a double covering of hair and wool—entire, but with the fleshy portions of the body in such a state of preservation that they have afforded food to dogs and wild beasts. The mammoths appear to have been suddenly enveloped in ice, or to have sunk into mud which was on the point of congealing, and which, before the process of decay could commence, froze around the bodies and preserved them in the condition in which they perished. It is thus that they are occasionally found when a landslip occurs in the frozen soil of the Siberian coast, which never thaws, even during the greatest heat of summer, to a depth of more than two feet; and in this way, within a period of a century and a half, five or six of these curious corpses have come to light from their icy graves. A very perfect specimen of the mammoth in this state was discovered in the autumn of 1865, near the mouth of the Jennissei. An expedition was dispatched to the spot by the Imperial Academy of Science last summer, and Mr. Lumley, Her Majesty's Secretary of Embassy, states that it is considered the result of the expedition will disclose some interesting facts in the natural history of a former creation.—*St. Louis Med. Rep. Nov.* 1867, *from Exchange.*

The Pyengadow, or Iron-Wood.—We learn that officers who conducted the survey made in British Burmah, in passing along the Beeling Valley, observed this magnificent tree growing on the hillsides. It is no uncommon thing to see the first branch of these trees at a height of eighty feet from the ground, the stem being perfectly straight up to that point. It is unfortunate that up to the present time no means have been found of making use of this timber, which, from its hardness, effectually resists the attacks of white ants and other insects. This valley is described as rich, and adapted for almost any cultivation.—*London. Pharm. Journ., March*, 1868.

A New Source of Naphtha.—In the 'Athenæum,' February 15, 1868, we read—"The belief expressed by some geologists that naphtha would be found in the Caucasus has been realized. A boring 276 feet deep, near Kuaaco, has struck a source of this liquid, which yielded 1500 barrels daily for one month; more recently a second source has been discovered near the former, from which the naphtha jets to a height of 40 feet above the ground, and flows out at the daily rate of 6000 barrels.—*London Pharm. Journ.*, *March*, 1868.

Preparation of Iodhydric Acid.—C. Winkler. Instead of preparing this acid by passing a current of sulphuretted hydrogen through water, containing iodine in suspension, the author proposes the following plan of working. Iodine is dissolved in carbonic disulphide, water placed on the top of this, and the sulphuretted hydrogen passed to the bottom of the vessel into the iodine solution. The dark color of the latter gradually becomes lighter, while the iodhydric acid formed is completely absorbed by the water. The sulphur which separates remains dissolved in the carbonic disulphide.—*Ibid, from Journ. pr. Chem.* cii. 33.

Mustard Paper.—M. Rigollot, a Paris pharmacien, has, under the name of *papier sinapisé*, contrived an elegant preparation which embraces all the advantages of the mustard cataplasm without incurring the risk of its inefficiency, owing to the loss of power in the flour of mustard. He has done this by extracting the fixed oil while retaining the rubefacient principle. A piece of the paper of the required size is put in water for a few seconds and placed wet on the part, whereon it is bound with a handkerchief. It does not cost more than the ordinary mustard plaster, and is always ready and promptly efficacious.—*Hays Journal*, from *Med. Times and Gaz.*, and *Bull. de Thérap.*, Sept. 30.

[B. J. Crew, of Philadelphia, has introduced a portable mustard plaster spread on paper, which appears to retain the properties of the mustard, and is very convenient.—*Editor A. J. Pharm.*]

The Giant Ostrich of Madagascar.—In the year 1850 two enormous eggs, found in the bed of a stream in Madagascar, were sent to Paris, accompanied by a small portion of a skeleton, and on a careful examination by the naturalists of the Garden of Plants, it was ascertained that the remains belonged to a species of the ostrich family, of vastly greater size, however, than any now known to exist. The largest of these eggs measured about 13½ inches by 9, and was estimated to be equal in capacity to six eggs of the African ostrich, twelve of the American, and to twelve dozen of those of the common hen. A cast of this egg is, we believe, in the magnificent museum of our Academy of Natural Sciences. The bird itself was supposed to have been nearly fourteen feet high. Another nearly perfect egg of this bird, named *aepyornis maximus* by the Paris naturalists, was sent a few years ago to London, where it sold for an enormous price, and during the present year still another had reached Paris. This was found in a sandy alluvium, at a depth of about five feet, and is entirely perfect with the exception of a small hole at one end, through which it had probably been emptied by some native in early times. The dimensions of this egg are much the same as the one referred to; the capacity is about 500 cubic inches, or more than two gallons.

Remains of these gigantic eggs are not very numerous among the natives of that portion of Madagascar where they are found, and are used as drinking vessels. Perfect specimens are, however, very rare. There is a tradition in the country that the bird is still in existence in the interior, although this is very improbable. That, like the Dode, the Solitaire and the Great Auk, it has disappeared within the historical period, is quite credible. The natives maintain that the bird laid but one egg, always dying soon after.—*Public Ledger, March* 5, 1868.

Deodorising Petroleum.—Your correspondent O. P. A. desires to receive information on the preparation of "plumbate of soda," and its use and application in deodorising petroleum. When oxide of lead or litharge is added to a pretty concentrated solution of caustic soda, the oxide of lead is dissolved therein, and may be considered to play towards the soda the part of an acid; the clear solution may be used with advantage to deprive petroleum of some foul smelling compounds it may happen to contain, especially as sometimes occur organic sulphur compounds, by thoroughly shaking and mixing the petroleum with the plumbate of soda, and afterwards giving sufficient time for the liquids to separate in two layers; the upper layer being the petroleum, the latter will have to be washed with water to remove the adhering soda, and should then be deprived of moisture by applying lumps of caustic lime.—Dr. A. A.—*London Chem. News, Jan.* 10, 1868.

Minutes of the Philadelphia College of Pharmacy.

The 47th Annual Meeting of the Philadelphia College of Pharmacy was held at the College Hall, Filbert St., on the evening of the 30th of March, 1868; twenty-five members present.

In the absence of the President, Vice-President Dillwyn Parrish was called to the Chair.

The minutes of the last meeting were read and approved.

The minutes of the Board of Trustees were read by Alfred B. Taylor, Secretary of the Board. By the reading of these minutes the College is informed that at the late Commencement the diploma of the College was conferred upon forty-eight graduates, as follows:

John W. Beck,	*Podophyllum Peltatum.*
Abraham Boyd,	*Cynips Quercifolii.*
Thomas F. Bradley,	*Extemporaneous Pharmacy.*
Eugene C. Bronson,	*Hypericum Perforatum.*
A. B. Clark,	*Caulophyllum Thalictroides.*
J. E. Corbidge,	*Pharmaceutical Manipulations.*
Robert L. Day,	*Caulophyllum Thalictroides.*
S. Levin Dilks,	*The learning and general principles of the Drug business*
Mortimer H. Eayre,	*Duties of the Apothecary.*
Fred. G. Elliott,	*Lycopus Virginicus.*
Howard England,	*Chemistry as applied to Agriculture, Arts, and the daily concerns of life.*
Horace W. Eastlack,	*Podophyllum Peltatum.*
W. L. Farr,	*Gelsemium Sempervirens.*
James Foulke,	*Extracta Fluida of our Pharmacopœia.*
James J. Fronheiser,	*Kryolite.*
Joseph Harrop,	*Taste and Odor of Cod-Liver and Castor Oils.*
Jacob K. Hecker,	*Polygonum Punctatum.*
Pratt R. Hoagland,	*Veratrum Viride.*
Henry A. Jorden,	*Cornus Florida.*
Joseph Karch,	*Lappa Major.*
Samuel D. Kay,	*Benzoin Odoriferum.*
Charles C. Klump,	*Cinchona.*
Benjamin Lillard,	*Cimex Lectularius.*
Edward McInall, Jr.,	*Chlorodyne.*
Robert T. Marshall,	*Aqua.*
Charles C. Matthews,	*Chelone Glabra.*
Orlando L. Moore,	*Juglans Cinerea.*
T. Bryan O'Brien,	*Professional intercourse between the Apothecary and Physician.*
Franklin Ottinger,	*Spigelia Marilandica.*
Clemmons Parrish,	*On the physical characteristics of the Officinal Powders.*
William H. Raser,	*Hydrastis Canadensis.*
William C. Rice,	*Stillingia Sylvatica.*
Clarence M. Schellinger,	*Elaterium.*
Robert L. Seybert,	*Cimicifuga Racemosa.*
Joseph B. Shaw,	*Buchu.*
John N. Shoffner,	*Verbascum Thapsus.*
Joseph B. Shropshire,	*Datura Stramonium.*
Allen Shryock,	*Ennomos Subsignaria.*
B. F. Shugard,	*Prinos Verticillatus.*
Samuel F. Simes,	*Cryolite.*

Matthias Simon,	*Benzoin Odoriferum.*
Homer A. Smith,	*Aralia Nudicaulis.*
George P. Stackhouse,	*Hydrargyrum cum Cretâ.*
Louis Stiefel,	*Iris Versicolor.*
Frank W. Thomas,	*Frasera Walteri.*
William H. Webb,	*Apocynum Androsœmifolium.*
Charles Wilson,	*Arsenicum.*
William Wilson,	*Geum Rivale.*

The minutes of the Board of Trustees further inform that a portrait in oil of Benjamin Ellis, M.D., was presented to the College by the Zeta Phi Society.

George Y. Shoemaker and H. B. Lippincott were recommended by the Board of Trustees for resident membership, they having been in business on their own account for the period of six years. An election being ordered, Ambrose Smith, acting as teller, reported the unanimous election of the candidates.

Prof. Edward Parrish made a verbal report for the delegates to the last meeting of the American Pharmaceutical Association. The proceedings of the Association having been published, a detailed account will be found in the transactions of the Association.

The Committee on Deceased Members announced the decease of Prof. Michael Faraday, of London, an honorary member of this College. An extended notice of Prof. Faraday has been published in the Journal of the College.

Thomas S. Wiegand, Secretary of the Committee having in charge the subject of the sale of the present College premises, and the erection of a new building, reported the sale of the premises for the sum of fifteen thousand dollars, and that possession was to be given to the purchaser on the 1st of April next. Mr. Wiegand further reported subscriptions to the building fund of about $6,300.

The following resolution was read and adopted :

Resolved, That the sum of fifteen thousand dollars, to be received from the sale of the present College premises on Filbert street, be appropriated to the Committee of Ways and Means, or the Building Committee appointed by the said Committee of Ways and Means ; and that an order be drawn on the Treasurer of the College for that amount, when collected by him ; to be appropriated, together with such sums as may be collected by that Committee from donations or otherwise, to pay the cost of erecting and furnishing the new Hall.

On motion of Prof. J. M. Maisch, the Chair appointed the following Committee to make suitable arrangements for the meeting of the American Pharmaceutical Association in this city in September next :

A. B. Taylor, James T. Shinn, Edward Parrish,
Wm. Procter, Jr., Chas. Bullock.

On motion, the new hall of the College was tendered for the use of the Association, if completed in time for said meeting.

The Secretary presented a specimen of cryptopia, a new alkaloid from opium discovered by Messrs. T. and H. Smith, of Edinburgh, received from those gentlemen; an account of which is published in the Journal for September, 1867.

A bill presented by the Secretary for $4.42, for postage stamps and envelopes, was ordered to be paid.

A communication from Samuel N. James, declining re-nomination as a member of the Board of Trustees, on account of removal from the city, was read and accepted.

A letter from Charles Ellis, President of the College, declining re-election, was read. After careful consideration, it was moved and unanimously adopted that the resignation be not accepted.

The report of the Committee on Latin Labels was read and accepted.

The Publishing Committee reported that the Journal of Pharmacy had been regularly issued during the past year. The numbers for July and September were ably edited by Prof. Maisch, during the absence of the editor in Europe. The subscription list has considerably increased during the past year, requiring an increase in the number printed. The financial condition of the Committee is rather more favorable than last year, but the report still exhibits a deficit, due to the want of punctuality in the payment of subscriptions.

The annual election being ordered, Caleb H. Needles and Daniel S. Jones, acting as tellers, reported the election of the following officers:

President,	Charles Ellis.
1*st Vice-President,*	Dillwyn Parrish.
2*nd Vice-President,*	William Procter, Jr.
Treasurer,	Ambrose Smith.
Recording Secretary,	Charles Bullock.
Corresponding Secretary,	Alfred B. Taylor.

Trustees,

Prof. Robt. Bridges, M.D., T. S. Wiegand, T. Morris Perot,
Daniel S. Jones, Prof. J. M. Maisch, Jas. T. Shinn,
Samuel S. Bunting, Chas. L. Eberle.

Publishing Committee,

Charles Ellis, Prof. Edward Parrish, A. B. Taylor,
Prof. J. M. Maisch, Wm. Procter, Jr.

Delegates to the American Pharmaceutical Association,

William B. Webb, Prof. Robt. Bridges, M.D., Wilson H. Pile, M.D.,
Thos. S. Wiegand, Caleb H. Needles.

The Secretary was directed to enter the following on the minutes:

The members of the College are reminded that the present is the last meeting of the College within the walls of the present building, where for many years they have so pleasantly conferred together. On separating, and bidding adieu to the present locality, they hope that their next regular assembling will be under pleasant auspices, in a building better adapted to the growing necessities of the College, and that each member will feel a renewed interest in the Philadelphia College of Pharmacy.

On motion, then adjourned.

Charles Bullock, *Secretary.*

Minutes of the New York College of Pharmacy.

The New York College of Pharmacy held its annual meeting March , 1868.

The diploma of "Graduate in Pharmacy" was conferred upon—

Geo. P. Cunningham, Utica, N. Y.	Paul Plessner, Saginaw, Mich.
Wm. H. Green, Newbern, N. C.	Alonzo F. Snelling, Richmond, Va.
Henry C. Morse, Elmira, N. Y.	Wm. Wenzel, New York.
Hampden Osborne, Farmville, Va.	

The President, John Milhau, addressed the young men, giving them some excellent advice as to the manner in which they should pursue the profession in future years.

The annual election of officers was then held, resulting as follows:

President,—John Milhau.

Vice-Presidents,—Wm. Neergaard, Geo. C. Close, Isaac Coddington.

Treasurer,—William Wright, Jr.

Secretary,—P. W. Bedford.

Trustees,—Paul Balluff, John Carle, Jr., Theobald Frohwein, Arthur W. Gabaudan, Thos. T. Green, Henry T. Kiersted, Bernard H. Reinold, John W. Shedden, David Hays.

Delegates to the Annual Meeting of the American Pharmaceutical Association,—Geo. C. Close, Isaac Coddington, Theobald Frohwein, Ferdinand F. Mayer, Wm. Wright, Jr.

P. W. Bedford, *Secretary.*

Editorial Department.

The Old College Building and the New Hall.—Immediately after the Annual Examinations were concluded, the old College Hall, in Filbert Street, presented a busy scene. By order of the Board of Trustees the building was to be transferred to the purchaser, J. B. Lippincott, on the 1st of April, so that only two weeks were left in which to secure the Library, cabinets of Materia Medica and Chemical Specimens, the Herbarium and the Apparatus, in boxes, and to remove them and the furniture of the rooms to the places where they were to be stored, until the new building should be ready. By the unremitting attention of Mr. Wiegand, of the Building Committee, aided by the Professors and some other members, this troublesome but responsible work was accomplished, ready for the cartmen, and before the 30th of March, the day of the Annual Meeting, when the building was used officially for the last time, nearly two hundred boxes, that were required to contain all that was capable of being packed, were sent away. Those of us whose memories stretched back to the inauguration of the old hall, could recall the feelings of gratulation which, in that twelfth year of the Institution, arose on the occasion among both members and students. Now, like an outgrown garment, it is abandoned for newer and larger accommodations, but with mingled feelings of thankfulness for our prosperity, and with regrets for the necessity of leaving the old hall where so much of the history of pharmaceutical progress in the United States has been written and acted.

At a general meeting of the committee of Ways and Means, held at the house of the Treasurer, D. Parrish, the Building Committee exhibited the plans and elevations of the proposed College Hall, on Tenth Street above Cherry street, after discussing which, the several bids for the contract for its erection were opened and read, and the contract was awarded to Henry B. Cook, for the sum of $27,000, requiring him to finish and deliver the building by about the 20th of August. The general outline of the building is rectangular, 47 feet by 72 feet, and fifty feet in heighth, divided into three stories, with an offset in the north-west corner to accommodate the stairs. A division wall of brick divides the building unequally about one-fourth of its length from the western end, rising through all the stories. The first floor will include a room for the Practical Laboratory, 43 x 25, a general meeting room, 43 x 30, and a room for the Trustees. The general meeting room will contain the museum cases, and trustees room the library cases. The second and third stories each contain a lecture room 50 x 43, capable of seating 350 students, and along side of each lecture room a committee room and a room for the Professors. The rise of the seats from the floor will be about 8 feet, affording beneath them two long narrow rooms on the north side, for the storage of the stock of Journals in the 2d story, and the Proceedings of the Association in the third story. The entrance will be a three-storied front, 17½ feet wide on 10th street, north of Cherry, built specially for college purposes and for a janitor's residence. It is the intention of the college to have a janitor of sufficient intelligence to look after the various interests of the Institution concentrated at the Hall, so that members can get entrance at any reasonable time. The various details of lighting, heating, water supply and drainage, have been carefully provided for. The building material is to be brick, the general style of the structure plain and substantial, and the roof of double tin, painted.

Fire at Powers & Weightman's Laboratory.—On the morning of February 29th, a fire broke out in the southern end of this establishment, which, before it was subdued, destroyed property to the value of

$150,000. Some men were engaged in emptying a still connected with the extensive apparatus for extracting cinchona, in the manufacture of Quinine, when in some way not well understood, an explosive condition of the atmosphere of the room from the escape of alcoholic vapor took place, which was ignited accidentally, blew out the side wall, burnt several men badly, and set fire to the buildings. The fire invaded the quinine and morphia departments which is the main cause of the serious loss. Besides a large amount of bark under treatment and ready for use there was an unusually large quantity of opium in course of extraction, (about 5000 pounds,) only a small portion of which was saved. The value of iron doors as a protection from fire was shown. In one direction the fire was cut off by them, and in another its ravages would have been stopped but that some one in the hurry had opened them to look after the fire and then forgot to close them. With their usual energy, the firm have already restored part of the buildings and have partly resumed their operations in the departments injured.

CHICAGO COLLEGE OF PHARMACY.—The Annual Meeting of this Institution was held in Rice's Building, March 10th, and was largely attended. The proceedings exhibited a healthy and energetic condition of the College and a determination to bravely push its interests forward. On the first of September there were $1500 in the Treasury. The Library Committee Fund was $725. Two lecturers have been obtained for the school if finally decided on. A resolution was passed, authorizing the Board of Trustees to encourage the establishment of a monthly journal devoted to the interests of Chemistry, Pharmacy and the collateral sciences, the same to be published by authority of the Chicago College of Pharmacy, and to be assumed by the College, should it hereafter desire such a Journal.

The Board of Trustees was empowered to take measures to establish a course of lectures on Pharmacy.

The President, E. H. Sargent, delivered the annual address. He congratulated the members on the increased prosperity of the College, and on the prospect of greater usefulness in future. He argued that Chicago was large enough to support a College of Pharmacy, and that besides they could look for students to the entire North-west. The library just commenced, contains 125 volumes, the cabinet 700 specimens, which he expected would be much extended by Mr. Ebert, on his return from Europe, where he was making a collection. The President hoped that the Chicago College was now in a condition to invite the Association to meet there next year, as there was only one Western city that contained more members than Chicago. After some other business the annual election was held, which resulted in the following board of officers.

President, E. H. Sargent; 1*st Vice President*, J. W. Mill; 2*d Vice President*, J. W. Ehrman; *Treasurer*, J. P. Sharp; *Secretary*, Louis

Strehl; *Cor. Sec'y.*, Thomas Whitfield; *Trustees*, Henry Biroth, W. F. Blocki, H. D. Garrison, Albert E. Ebert, N. Gray Bartlett.

THE TAX ON ALCOHOL.—Many efforts have been made to reach the understanding of Congress in reference to the great burthen of this tax on legitimate manufacturers requiring Alcohol, and the disastrous inroads it has caused on public morals by presenting a temptation too strong for resistance by the officials to whose care the revenue laws relative to whiskey are committed. The following memorial is a new effort and explains itself.

To the Congress of the United States:

The Philadelphia Drug Exchange, composed of the Druggists, Manufacturing Chemists and Pharmaceutists, Perfumers, and others, beg leave to lay before your Honorable bodies a brief statement.

The manufacture of chemicals is probably larger in Philadelphia and its vicinity than in all the rest of the United States. Many processes of this manufacture depend mainly upon Alcohol as a material, or as a medium; so that the *useful* consumption of Distilled Spirits is perhaps more fully represented in our Association than in any other single organization of this country. The amount of this consumption for industrial purposes, in Philadelphia, is estimated to be, under favorable circumstances, about twenty thousand barrels of proof spirit annually.

On March 21st, 1867, when the evasion of the $2 tax had become common and safe, the Drug Exchange took the following action:

" *Whereas*, The Amendatory Tax Law passed by Congress at its last session, contains this clause:—

"SEC. 21. *And be it further enacted.* That whenever any Distilled Spirits so found, elsewhere than in a Bonded Wharehouse, shall be sold or offered for sale at a less price than the tax imposed by law thereon, such selling or offering for sale as aforesaid shall be taken and deemed as *prima faciæ* evidence that said spirits have not been removed from a Bonded Warehouse according to law, and that the tax imposed upon the same has not been paid, and the same shall, without further evidence, be liable to seizure and forfeiture.

"*And Whereas*, We are anxious to maintain and vindicate our character as law-abiding citizens, however easy or profitable the violation of the law might be;

" *And Whereas*, In such adherence to the letter and spirit of the law, we are liable, through dishonorable competition, to the loss of all that part of our business which depends upon the use or sale of distilled spirits: Therefore

" *Resolved*, That we, members of the Philadelphia Drug Exchange,—Druggists, Manufacturing Chemists, Perfumers and Brokers,—*will not buy, offer, or sell distilled spirits, or alcohol*, either directly or indirectly, *at a less price than the Government Tax*, either by a net price, or by any commission, drawback, return, or any counterbalancing advantage whereby the spirit of the law may be violated, or its intention defeated.

"*Resolved*, That for our own protection, and for the assistance of the Government, we will endeavor by every honorable means to discountenance and discourage any evasion of the law, and to prevent the recurrence of any such violations which may come to our knowledge."

These resolutions were signed by a large portion of the Drug and Manufacturing interest, and were faithfully adhered to, through constant temptation and most trying loss.

Meantime, all manufacturers and dealers in whose business the article enters, who were anxious to comply with the law, saw their trade gradually pass into channels not obstructed by scruples on this point. Their constant appeals and patient waiting have developed only more clearly the helplessness or indifference of the Government officials, notwithstanding the stringent provisions of the law.

We beg, therefore, to add our earnest protest against further experiment with the tax of two dollars per gallon on Distilled Spirits. Its results as to revenue, and to public morality, we may confidently leave to be judged by your honorable bodies; but for the interests of honest industrial pursuits, we earnestly urge that its failure and injustice are demonstrated. The demoralization already caused by it will be felt by generations to come. The Druggist, the Chemist, the Perfumer, the Varnish-maker, see with dismay, a gloomy alternative presented. They may maintain the law and incur the ruin of their business; or, they may violate it, and bear the humiliating consciousness of complicity with fraud, in order to earn their daily bread.

We respectfully petition that the tax may at least be reduced to *fifty cents per gallon*, as recommended by the Special Commissioner of the Revenue. The same evils, in degree, might exist at that rate; but the main motive of enormous gain being withdrawn, distillation would be likely to return to its legitimate channels, and to fall again under the control of those responsible establishments who have shown some disposition to meet the demands of the Government.

Our deliberate conviction is, however, that a lower rate,—probably 25 cents per gallon—will ultimately be found to be more desirable, for both revenue and morals. It would restore the use of Distilled Spirits to many branches of industry from which it is now excluded by its high price. A prominent instance is the manufacture of White Lead, in which several of us are engaged, and in which large quantities of Whisky were formerly used; but we have been compelled to seek a cheaper substitute. A low price would also extend its consumption among Varnish-makers, Dyers, Soap-makers, and for many minor uses.

For the Philadelphia Drug Exchange,
Robert Shoemaker, *President.*

German Exchanges.—Through the aid of our friend Albert E. Ebert, now in Munich, we have been able to make arrangements for exchange with six of the prominent German Pharmaceutical Journals.

Crew's Spread Mustard Plaster.—The great value of the mustard poultice as a rubefacient in cases requiring rapidc ounter-irritation is universally admitted, but the inconvenience of applying them is often very great, especially when the patient is not in bed. Several attempts have been made to prepare a portable and permanent mustard plaster, of which the "Papier Sinapisé" of M. Rigollet (see p. 276 of this Journal) is an example. We have also seen a translucent paper called "Cooper's Sinapine Tissue," or mustard paper, which appears to owe its rubefacient power to capsicum, and is not entitled to the name of mustard paper,—both tasting and smelling of Cayenne pepper. Our attention has been directed to this subject by an examination of the mustard paper of Benj. J. Crew, who has been for some time past engaged in working out the problem of an *efficient* and *portable* mustard plaster. This he has succeeded in doing perfectly. The mustard in substance forming a uniform layer on the paper, sufficiently pliable, adheres firmly, and when dipped in water is ready for application in half a minute, adhering sufficiently to be easily retained in position with a bandage. Applied to the arm its action was sensibly manifested in three minutes, with the usual symptoms of good mustard. As this preparation retains its power unaffected by age so long as it is kept dry, it will be found exceedingly valuable in all cases where a rubefacient is indicated, and convenient for travellers and country physicians, as well as in families.

The Laboratory.—A weekly record of Scientific research. London, April to October, 1867 : pp. 449.

About a year ago this journal was commenced, in London, under the editorial auspices of John Cargill Brough, and was admirably sustained, editorially and by many excellent contributions. But at the end of six months its patronage, though increasing, did not justify its continuance. With the last number, Sept. 28, the editor expressed a hope that its suspension was only temporary, and that it would reappear with the current year. In expectation of this proving a fact, we have waited so long that it seems probable that the project of resuscitation has been abandoned. Among the papers it contained, was a series of letters on the chemical and metallurgical objects in the Paris Exhibition, well worth preserving.

Consumption in New England and Elsewhere, or soil-moisture one of its chief causes. Address delivered before the Massachusetts Medical Society. By Henry J. Bowditch, (second edition), Boston, 1868 : pp. 154 octavo.

This is an attempt to prove the existence of a general law under which Phthisis is engendered in a community or in isolated families, and this law looks to the average condition of the atmosphere as influenced by the soil-moisture resulting from bad drainage. A map of Massachusetts, colored in a way to indicate the prevalent condition of each township, is given. Numerous and widely extended observations are needed to establish such a law.

Fourth Annual Report of the Alumni Association of the Philadelphia College of Pharmacy; containing also the Valedictory Address delivered to the Graduating Class of 1868, by Edward Parrish, Prof. of the Theory and Practice of Pharmacy. Philadelphia, 1868 : pp. 40.

It is a commendable feature of the Alumni Association, that it thus preserves, in a connected form, the main features and documents of the Annual Commencements. Besides the address of Prof. Parrish, which is an earnest appeal in favor of public encouragement to scientific institutions, the report contains an account of the presentation of the portrait of the late Dr. Benjamin Ellis, by the Class, and its reception on behalf of the College, by Prof. Bridges, whose excellent remarks in relation to Dr. Ellis are given in detail. The Secretary reports the Alumni Fund for the practical school to be $4425, and hopes it will soon be $5000. The minutes of the fourth annual meeting are also presented, including the address of President Wiegand, from which we learn that the Association now numbers 190 members. After four years of faithful service as Secretary, Mr. William C. Bakes, retires from office, succeeded by Clemmons Parrish.

Constitution, By-Laws and Code of Ethics of the Chicago College of Pharmacy, with a list of Officers and Members. Organized and incorporated Sept. 5, 1859. Chicago, 1867.

From the tone of this pamphlet it may be inferred that the Chicago College of Pharmacy has turned over a new leaf, and is about to commence a career of increased usefulness. The programme for the School of Pharmacy proposed to be established is given, and it is more than probable that it will commence in the fall of 1868. So far as we have heard the faculty have not been appointed.

A Manual of the Dissection of the Human Body.—By Luther Holden, F.R.C.S., Assistant Surgeon and Lecturer at St. Bartholomew's Hospital, London. With notes and additions by Erskine Mason, M.D., Demonstrator of Anatomy at the College of Physicians and Surgeons, and Surgeon to the Charity Hospital, New York. Illustrated with numerous wood engravings. New York, Robert M. DeWitt, Publisher.

From R. M. DeWitt, through Lindsey & Blakiston, too late for notice.

OBITUARY.

Dr. Stephen Procter, formerly of Philadelphia, died March 26th, at Hot Springs, Arkansas, aged 55. He graduated in Pharmacy in 1834, and in Medicine in 1843. He was the only surviving brother of the Editor of this Journal.

Dr. John Davy, F. R. S., the brother of Sir Humphrey Davy, died at Ambleside on the 24th of January, 1868. He was born at Penzance in 1790, and graduated at Edinburgh in 1814. He had considerable reputation as a chemist and physiologist, and wrote the life of his brother Sir Humphrey.

Prof. A. V. Vogel, M. D.—A recent German exchange announces the death of this German chemist at Munich, in the 90th year of his age. His name is connected with many chemical investigations, and his numerous contributions to the *Journal de Pharmacie*, commenced in 1811, continue through many volumes. He was the oldest member of the Academy of Sciences of Munich.

Sir David Brewster.—This great natural philosopher died on the 10th of February, 1868, at Allesley House, near Melrose, in his 86th year. His career has been long and successful. He commenced his studies in science at the University of Edinburgh, and took his degree of M. A. in 1800. In 1815 he was presented with the Copley medal of the Royal Society, for a valuable paper on the polarization of light; and afterwards made many discoveries connected with the subject of light. He was a prominent founder of the British Association, and in 1832 was knighted by William IV. One of his last efforts was to disprove the authenticity of the letters produced by M. Chasles to the French Academy, invalidating the claims of Sir Isaac Newton to the discovery of the law of gravitation. Sir David retained his powers and love of science to the last, and, like Faraday, was one of the brightest intellects in the British galaxy of scientist.

William Herapath, F.C.S., of Bristol, England, died on the 13th of February, in the 73d year of his age. He was well known as a toxicological chemist. He discovered the curious compound iodosulphate of quinia, which possesses optical properties like those of tourmaline, and made its analysis. He was Professor of Chemistry at Bristol, and one of the founders of the Chemical Society.

Dr. Daubeny, of Oxford, England, died on the 12th of December, 1867, at the Botanical Gardens, in his 72d year. He was educated at Oxford, graduated in medicine, was elected to the professorship of Chemistry in 1822, and became a member of the Royal Society. He afterwards was elected to the professorship of Botany, and became Curator of the Botanical Gardens, having resigned the practice of the profession of medicine. He wrote several works, among which was a description of volcanoes, and lectures on Roman agriculture. His contributions to science were numerous and varied.

Robert Warington, F.R.S., died at Budleigh, in Devon, on the 12th of November, 1867, and was born at Sheerness, Sept. 7th, 1807. He was apprenticed to Mr. T. Cooper, a manufacturing chemist, where he acquired his bent for chemical pursuits. In 1828 he was chosen by Prof. Edward Turner as his assistant for three years; he next became the chemist to Messrs. Truman, Hanbury and Buxton, the great brewers, during eight years, when, at the death of Mr. Hennell, he succeeded him as chemical operator at Apothecaries' Hall, a position he continued to hold until a year before his decease. Mr. Warington took an active interest in matters connected with chemical science, and was concerned in the founding of the Chemical Society, the Cavendish Society, and the Royal College of Chemistry. He was repeatedly engaged as a revisor in connection with the London and British Pharmacopœia, and in all things relating to the higher interests of pharmacy he was ever an active and useful observer. In natural history he was particularly interested in the investigation of the relations of vegetable and animal life, as exhibited in those natural conditions represented by the aquarium, and published various papers on the subject. His papers are very numerous, and were often the practical applications of chemistry in the arts; one of the most useful of them was his discovery of the power of animal charcoal in separating bitter and other principles from liquids, noticed whilst engaged at the breweries. Mr. Warington married in 1835, and leaves a family.

THE

AMERICAN JOURNAL OF PHARMACY.

JULY, 1868.

ON CHLOROFORM.

By John M. Maisch.

In the Proceedings of the American Pharmaceutical Association for 1866, page 264, I have reported the results of a series of experiments made in August, 1865, with the view of determining the cause of the decomposition of chloroform.* The results may be briefly stated as follows:

1. Pure chloroform of 1·49 sp. gr. is decomposed by light, but not in the dark;

2. Pure chloroform diluted to 1·475 sp. gr. is decomposed neither by light or in the dark, nor in the presence or absence of moisture.

All the vessels in which the experiments were made contained more or less air.

During the year 1866 the decomposition of chloroform has been the subject of repeated investigations in Europe; the following will exhibit the results at which the experimenters arrived:—

Hager† found a chloroform of 1·496 sp. gr., which had been kept in a dark closet for three months, to contain free muriatic acid; the acid reaction could not be entirely removed by agitation with magnesia and subsequent rectification, and the water shaken with the chloroform contained much muriatic, but little formic and chloro-acetic acids. The author recommends to keep chloroform in several vessels in a dark and cool place, and suggests its preparation from methylic alcohol, or with a strong chlorinated lime, as the probable cause of the decomposition.

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* Am. Jour. Pharm. 1867, 72.

† Pharmac. Central Halle, vii, 426.

In an essay on the coloring matters of bile, G. Städeler* states: "Chloroform, in the state of continuous decomposition, is now rather frequently met with in commerce. Recently rectified over some alkali, it has the odor of pure chloroform; but it rapidly becomes acid, and evolves the suffocating odor of phosgene gas. Such a chloroform dissolves bilirubin with a green color, and likewise changes its yellow solution in pure chloroform to green. Since less than one milligramme of bilirubin is sufficient for this reaction, and since it takes place when the decomposition has just set in, and the odor of phosgene gas is hardly perceptible, I consider bilirubin as an excellent reagent to test chloroform for its medicinal purity. I have never observed this decomposition and this reaction with bilirubin, with good chloroform prepared from alcohol."

From communications received by Dr. H. Hager in regard to chloroform inclined to spontaneous decomposition, he infers† that the different specimens were not alike, and that the causes of their decomposition likewise appear to differ; chlorine substitutes of a higher order he regards as the principal cause, and suggests their removal by fractional distillation, collecting that only which is obtained between 60° and 65° C. (140° and 149° F.) Steltzner's method for regenerating decomposed chloroform by agitation with solution of caustic potassa and rectification, is not applicable in all cases.

The fatal result by the inhalation of chloroform at the surgical clinic of the Berlin University was followed by an examination of the anæsthetic used. Dr. Martins‡ found that only one-third of it distilled at 62° C., the temperature rose rapidly to 70°, 72°, 75°, and a considerable residue was left even at 80° C.; it contained neither free chlorine nor muriatic acid, but had the suffocating odor of phosgene gas and chloride of carbon. It evidently contained higher chlorinated compounds.

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* Ann. d. Chem. und Pharm. 1864, 319.

† Pharmac. Central Halle, vii, No. 49.

‡ Archiv d. Pharm. 1867, March, 255.

Dr. Bartscher* ascribes the bad effects of chloroform to its spontaneous decomposition, even if originally pure, in the course of two to three months, in consequence of which muriatic acid, alcohol, and chloride of ethylene is then found in it. He demands that before it is used for inhalation, chloroform must be examined, and, if necessary, rectified; also that it be preserved in a dark bottle, kept in a dark place.

Subsequently Hager† insisted that pure chloroform is not decomposed by sunlight. Not having seen this paper, I am not able to tell upon what grounds he makes this assertion.

Professor Wiggers‡ has kept chloroform in a shady place unaltered for more than fifteen years; it had been prepared by himself from alcohol, and was purified by treatment with concentrated sulphuric acid. He further remarks: "It may be considered proven that a well-prepared, pure chloroform, of the formula $C_2 H Cl_3$, is not altered on keeping if it is guarded against sunlight, and likewise carefully against daylight. We ask now, how and from what materials is that chloroform prepared which is so readily decomposed? Is it true chloroform, and does the decomposition take place under all circumstances only in consequence of the foreign admixtures? What are these foreign admixtures, and what products are formed in consequence of this spontaneous decomposition? To answer these queries, would it not simplify the inquiry to trace such a chloroform back to its source, to ascertain the mode of preparation, and what admixtures it may therefore contain?"

The effect of light on chloroform was studied by Dr. C. Schacht§ in May, 1867. The chloroform used in his experiments had at 18·5° C. (65·3° F.) a specific gravity of 1·4960, did not react with pure concentrated sulphuric acid, was free from alcohol, and had a constant boiling point of 67° C. (152·6° F.); water agitated with this chloroform was not affected by nitrate of silver. The unvarying boiling point and the silver test are regarded by the author as sufficient to prove the purity of chloroform. If this chloroform was exposed for a short time to the sunlight in filled or half-filled bottles, it contained hydrochloric acid and phosgene gas; but it kept unaltered if excluded from the sunlight; diffused daylight has the same effect after a longer period; freed by sodium from all adhering moisture, it was decomposed in precisely the same manner. Pure chloroform is not affected by diffused daylight or direct sunlight, if preserved in a perfect vacuum.

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* Ibid.

† Pharm. Central Halle, 1867, No. 40.

‡ Jahresbericht der Pharmacognosie, &c., 1866, p. 329.

§ Archiv. d. Pharm. 1867, Dec., 213.

At the close of his paper, Dr. C. Schacht gives, from Dingler's Polytech. Journ., Oct., 1867, a short account of the results as published in my previous paper; and from his remarks it is evident that he has not tried the behaviour, in the direct sunlight, of chloroform reduced by alcohol to the specific gravity of 1·475.

The points which, according to the above papers, seem to require investigation, are—

1. The process and material employed in the manufacture of chloroform prone to spontaneous decomposition;
2. The regeneration of chloroform which has been decomposed by light;
3. Additional proof that chloroform of 1·475 is not decomposed by sunlight.

During the year 1864, and in the early part of 1865, very considerable quantities of chloroform were made at the U. S. Army Laboratory of this city, under my personal supervision. Some of this chloroform was found to be rapidly decomposed when kept on the shelves, and this observation led to the experiments which resulted in determining the fact that a reduction of its specific gravity by alcohol prevents this decomposition.

I had the following apparatus built for preparing and rectifying chloroform:

The still was made of heavy boiler iron, 8¼ feet high and 3 feet diameter, with a capacity of about 780 gallons; the top and bottom, being sections of a sphere, were of cast iron. The whole rested upon four feet made of heavy iron pipe, and was placed a few inches below the level of the floor, so that the discharge cock could be conveniently turned. This latter, a so-called two-inch round way cock, connected by means of a bent iron pipe with the bottom of the still, the contents of which could thereby be run off directly into a drain connecting with the sewer. A system of upright steam pipes was attached near the centre of the bottom, and so arranged that the steam ascended the inner (smallest), and descended through the outer (larger) pipes. About half-way up on the side a three-quarter-inch steam pipe passed into the interior, and was bent in an oblique direction towards the bottom, its lower half being perforated for the purpose of injecting steam.

The top contained a man-hole 16 inches in diameter, with a high flange cast around it, upon which fitted a copper still-head; into the tubulure, 3 inches in diameter, a pipe of pure lead was inserted, reaching below the base of the head; the opening was closed by a screw-cap. The head was connected with an iron safety chamber, the object of which was to prevent the mixture in the still from reaching the receiver, in case it should boil over.

The charge was mixed in the third story, in an iron kettle, then strained into a lead-lined wooden tank elevated on the second floor, and from this, by means of a two-inch round way cock, and a piece of lead or rubber tube, through the tubulure, which was nearly even with the floor, run into the still below.

As much as 800 pounds of chlorinated lime, containing 30 per cent. active chlorine, has been worked successfully at one time; this was mixed with 350 gallons of water and 18 gallons of 95 per cent. alcohol, and the mixture heated to 120° F. by blowing steam into it. The temperature was ascertained by a thermometer dipping into solution of chloride of zinc, which was kept in an iron tube inserted in the lower half of the still. A little steam was now kept in the upright pipes,—merely sufficient to compensate for the loss of heat by the surrounding air. Soon the temperature rises, and the chloroform distils over; when it ceases to distil, steam is again blown in, and the mixture kept in active boiling for some time, until all chloroform and alcohol has distilled.

The crude chloroform settled in the receiver from the distillate was transferred to the wash-can, where it was agitated with three successive portions of water. When the alcohol had been thus removed, the chloroform was agitated in a leaden tank with about one-sixth of its weight of sulphuric acid, and the two liquids left in contact, with occasional agitation, until sulphuric acid was scarcely colored on being shaken with a little of the chloroform. The latter liquid was then repeatedly agitated in a copper can with a concentrated solution of carbonate of soda, to remove adhering sulphuric acid. The chloroform was separated, and—about sixteen gallons at one time—subjected to rectification from a copper still, after it had been previously diluted, according to its specific gravity, with from eight to sixteen ounces of alcohol, to bring its density within the limits allowed by the pharmacopœia.

It will be observed that the process of preparing chloroform is that of B. Hirsch,* with such modifications as were found convenient and requisite to work such large quantities. The chlorinated lime used was of English manufacture, and usually contained in the neighborhood of 35 per cent. active chlorine; the percentage rarely fell below 30, and was once as low as 17¾ per cent. The actual weight of the lime compound was decreased with the increase of the amount of chlorine; but if the latter fell below 30 per cent. the alcohol was lessened in proportion, since experience proved that more than 800 pounds could not be conveniently worked in the still at one time.

The various wash waters of the crude chloroform were always used in the next charge, the amount of alcohol contained therein having previously been approximately ascertained.

Various methods had been carefully tested before the above process was finally adopted; among them I may mention the quick heating of the mixture until it rapidly rose in the still, checking its passing over by cold water; also the heating of the mixture to as high a point above 120° (about 160° F.) as could be prudently done without imminent danger of the charge being carried over; also the blowing of alcohol under steam pressure into a mixture of chlorinated lime and water, heated to various temperatures. All these methods failed to give the good results obtained by the process finally adopted.

From the few memoranda now in my possession, I select the following experiments:

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* Amer. Journ. Pharm. 1862, 42.

620 lbs. chlorinated lime of 30·86 per ct. = 191·3 lbs. active chlorine, 300 galls. water, and 13·5 galls. 95 per ct. alcohol; temperature 86° F., in 15 minutes 90°, 22 min. 110°, 30 min. 120°, 40 min. 130°, 44 min. 134° (injected steam turned off), 76 min. 144°, 100 min. 150°, 104 min. 153° (chloroform commenced to distil slowly, by drops), 116 min. 160°, 130 min. 170°, 142 min. 180°, 151 min. 190°, and the distillation slackening, steam was gradually injected; distillation finished in 190 minutes. Result: crude chloroform, washed once, 45·5 lb. = 23·78 per ct. of the chlorine employed.

650 lbs. chlorinated lime of 30·86 per ct. = 200·6 lbs. chlorine; 310 galls. water, 17 galls. 95 per ct. alcohol; temperature 76° F., in 22 min. 90°, 27 min. 100°, 32 min. 110°, 38 min. 120°, 51 min. 130°, 59 min. 140° (injected steam off), 71 min. 150°, 80 min. 160°, 89 min. 170°, 97 min. 180°, 102 min. 190°, 110 min. 200°; steam was now injected to boil the residue; distillation finished in 165 minutes. The chloroform was inadvertently mixed with that of the next charge, which consisted of—

750 lbs. chlorinated lime of 17·7 per ct. = 132·75 lbs. chlorine, 330 galls. water, 11¾ galls. 95 per ct. alcohol; temperature 90° F., in 16 min. 110°, 20 min. 120°, 23 min. 130° (injected steam off), 28 min. 140°, 36 min. 150°, 45 min. 160°, 54 min. 170°, 62 min. 180°, 69 min. 190°, 78 min. 200°; distillation finished in 120 minutes. Result of the two distillations: crude chloroform washed once, 74.5 lbs. = 19·35 per cent. of the chlorine employed.

800 lbs. chlorinated lime of 36 per ct. = 288 lbs. chlorine, 275 galls. water, 19 galls. 95 per ct. alcohol; temperature 92° F., in 12 min. 100°, 15½ min. 110° (injected steam off), 23 min. 120°, 32 min. 130°, 42½ min. 140° (steam shut off from upright pipes), 65 min. 162°, 76 min. 180°. The mixture in the still had risen so rapidly that it was at this point forced over into the receiver; all attention was necessary to save the distilled chloroform, and prevent an explosion of the apparatus. Result: crude chloroform washed once, 61·5 lbs. = 21·3 per cent. of the chlorine employed.

These few cases indicate the loss and danger sustained by too rapid heating of the mixture. The time required for running off a charge was from three and a half to four hours, so that by good management and hard work three charges could be worked up in a day's work of eleven hours (counting the dinner hour), making about 150 ℔ washed chloroform the average product of a day. The amount of chlorinated lime actually used for each charge was equivalent to about 200 ℔ of active chlorine, or little exceeding that figure. The first charge distilled in the morning required a longer time than subsequent ones, because the whole apparatus was heated, and we started then with the temperature from 12 to 18° F. higher than early in the morning.

The process of purification is based essentially upon the same principles as that of our Pharmacopœia, though the manipulation was varied to better enable us for an uninterrupted continuance of purification, and to avoid as much as possible loss of material. The statement of Hirsch,* that washed crude chloroform can be obtained perfectly pure without previous treatment with sulphuric acid, simply by rectification at a temperature not exceeding 158° F., was repeatedly verified by experiments on a large scale (about 16 gallons at a time); but the trouble attending the limitation of temperature, in consequence of the occasional change in the pressure of steam, and the evaporation of the water from the bath, required the constant attendance of a laborer, so that it was found practicable to change the process to one which required only occasional attention.

After the chloroform had been purified by agitation with sulphuric acid and carbonate of soda, and properly diluted with alcohol, it was at first rectified in this condition; subsequently, however, the addition of some caustic lime into the rectifier was found advantageous. The distillate was collected in one-half or one gallon bottles, and the contents of each bottle tested by sulphuric acid to ascertain its purity. The last portions from the rectifying still always imparted more or less color to sulphuric acid and were returned to the sulphuric acid washer.

The rectified chloroform was kept surrounded by water in a copper tank, from which it was drawn by measuring cocks discharging respectively one-half and one pound of chloroform, sp.

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* Amer. Journ. Pharm. 1862, 44.

gr. 1·490. My plan for these cocks was much simplified by Mr. T. M. Hammett of this city, who constructed them so that they worked admirably during the long time they were continually in use; they measured the weight for which they were graduated, invariably correct, and a great deal of time, labor and loss of material was saved thereby. One was first made for measuring half a pound of ether, sp. gr. 725, and finding it so admirably adapted to meet all requirements, they were likewise adopted for the chloroform, and I believe would answer equally well for all costly and volatile liquids.

The plug of these measuring cocks is of an obconical shape and hollow, and is perforated at two places, namely, just at its base even with the bottom, and perpendicularly above this point even with the top. When these perforations are turned towards the tank, the lowest one connects directly with the inside and admits the liquid, while the upper one communicates by means of a tube with the top of the tank, to remove the air from the cock into the tank; the measure is filled as soon as the liquid appears in the glass tube which forms the lower portion of the connecting tube just mentioned. A half turn is now given to the plug when the liquid is discharged from the lower opening through the nozzle, while the hollow space is again filled with air through a groove in the top of the cock, just communicating with the upper opening, without the possibility of loss by evaporation. By turning alternately to the right and to the left, the measuring cock is filled and emptied in reciprocal succession.

In the beginning of the manufacture of chloroform at the U. S. Laboratory, deodorized alcohol, the so-called cologne spirit, was employed. This alcohol is purified from the greatest but not the entire amount of fusel oil; subsequently ordinary commercial alcohol, containing a larger proportion of fusel oil, was used, and the chloroform obtained was quite as good as from the former source, if the requisite care was taken during the process of purification and rectification. At various times experiments were made with precisely the same good success, with alcohol obtained by the distillation of the dregs from the manufacture of certain fluid extracts. This alcohol was usually regenerated by rectifying it in contact with a sufficient amount of permanganate of potassa, or sometimes bichromate of potassa and some sulphuric acid. Those powerful oxidizers, permanganic and chromic acid, destroy many odorous principles of vegetables before they oxidize the alcohol; exceptions are certain volatile oils, particularly the carbohydrogens and those containing little oxygen. But alcohol obtained from colchicum, gentian, aconite, belladonna leaves, &c., was by this process completely restored and rendered fit for use, to be sure with the loss of a little alcohol, which is destroyed by the excess of the oxidizing agents employed. Chlorine acts in a similar way, and if it should produce any liquid chlorinated compounds by reacting with these odorous principles, they are most assuredly removed by the subsequent treatment with oil of vitriol and the following rectification. It is more than probable that even the presence of considerable amounts of volatile oils in the alcohol would merely occasion a loss of chlorine, but be without effect on the purity of the chloroform, because all the chlorinated products of the volatile oils boil at a much higher temperature.

The effect of sulphuric acid upon chloroform has been frequently the subject of investigation. It is true, as stated by Dumas,* that chloroform, kept over sulphuric acid, will evolve hydrochloric acid, but this decomposition takes place only in the light, while, if the mixture is kept in blackened bottles, it will keep perfectly well. Nor does the purification with sulphuric acid render chloroform prone to subsequent decomposition, as is proven by the statement of Wiggers, cited above, which accords with my own experience. It is most undoubtedly the case, as was first stated by Gregory and afterwards by Dr. Squibb, that the sole cause of the decomposition of chloroform upon the shelves of our stores, is due to its concentration, to its freedom from alcohol.

The specific gravity of absolute chloroform is about 1·50, of which density I have repeatedly obtained it, and in this respect I can only reiterate the statements of Hirsch and others. The true specific gravity of absolute chloroform has probably not been ascertained, the older statements all being more or less below the above. But for medicinal use, I have no doubt, it would even be less adapted than a chloroform of the specific gravity 1·49 to 1·495, which has been adopted in all recent pharmacopœias, since it is most likely more prone to spontaneous decomposition than the officinal, which, exposed to direct sunlight, contains free muriatic acid in a short time, even though it be prepared from pure alcohol.

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* Ann. de Chim. et de Phys. lvi, 115.

It is not improbable that in certain localities chloroform may be prepared from very impure alcohol, and, in consequence of careless purification or rectification, may contain chlorinated compounds decomposing even more readily than chloroform itself. I believe, however, with Schacht, that a constant boiling point is a very good, perhaps the best criterion for the purity of chloroform. Schacht experimented with a chloroform of 1·4960 sp. gr., and a boiling point of 67° C. (152·6° F.) I have in my possession a sample of sp. gr. 1·4840, at 66° F., which was rectified in July, 1865, and had been kept during this time in diffused daylight, in a well-corked and perfectly dry bottle, without acquiring the slightest acid reaction. Exposed to the direct sunlight, it showed after two days no free acid. Tested with an equal bulk of oil of vitriol, it imparted to it after 24 hours an extremely faint yellowish color. Evaporated from filtering paper, no difference in the odor was perceptible.

It may be inferred from this that chloroform of 1·4840 sp. gr. will keep well in diffused daylight, and, at least for a limited time, also in direct sunlight. One pound of this chloroform was re-rectified by distillation. Introduced into a glass retort and suspended over a carefully regulated gas flame, a false boiling commenced as low as 62·2° C. (144° F.), and the greater portion distilled over at this temperature, when the distillation was stopped, and the distillate returned to the retort. This false boiling proceeded from two or three points in the bottom of the retort, from whence minute globules of vapor arose, which finally burst above the surface of the liquid, when distillation commenced.

In the second experiment with direct heat, the temperature was pushed far enough until active boiling commenced, and it now vacillated between 66° and 67° C. (151° and 153° F.)

The distillate was again returned to the retort, and heated in a water-bath, the whole of the chloroform being immersed. Carefully heated, the temperature in the retort rose to 69° C. (156° F.) without the slightest sign of boiling. Some fragments of glass were dropped in, when it boiled violently for a few seconds, the mercury at the same time receding, after which the boiling continued, the thermometer varying several times between 64° and 64·5° C. (147° and 148° F.) After boiling ceased, a few drops remained in the retort, which immediately imparted a yellowish-brown color to sulphuric acid, while the distillate was without reaction even after prolonged contact.

This chloroform had been prepared by the process given above, from good ordinary alcohol of 95 per cent. by volume, not entirely deprived of fusel oil.

A sample of chloroform obtained from a manufacturer had the specific gravity of 1·484, was free from reaction on litmus, and scarcely affected sulphuric acid. It behaved to the direct and diffused sunlight precisely like the one mentioned before. This chloroform was rectified by very slow distillation over chloride of calcium, and the distillate collected in fractions of three ounces each. Sulphuric acid was avoided, because it has been supposed by some to induce decomposition. Some chloroform prepared by myself was properly reduced by the addition of alcohol, and then rectified in the same manner over chloride of calcium.

The fractions varied in specific gravity from 1·478 to 1·494, and all were uniformly exposed to sunlight for one day, when some of the heavier (1·480 to 1·484) were found to be acid, while other fractions of the same gravity retained their neutral behaviour to test paper. On examining the bottles a slight condensation of moisture was observed above the acidified chloroform, while the samples retaining their neutral reaction were free from it. This latter chloroform was now emptied into damp bottles and exposed to the sunlight for about three hours, when litmus was instantly colored red, and in the course of a few seconds entirely bleached. Both chloroforms behaved precisely alike.

It appears from these experiments as if the presence of moisture, however slight, predisposes chloroform of sp. gr. 1·480 to 1·484 to a rapid decomposition; and if this is really the case, we can readily understand that chloroform of a higher specific gravity, if filled in damp bottles, will very rapidly change under the influence of light. This moisture condenses above the chloroform, and, absorbing the chlorinated products of decomposition (free chlorine?), separates in the form of yellow drops.

The same chloroform, reduced to the specific gravity 1·459 to 1·476, kept unaltered in the presence of moisture after a week's exposure to the sunlight.

It is due to my friend, Mr. Augustus Henkel, now of Cincinnati, to state that quite a number of the experiments referred to above were either made or verified by him during the summer of 1865.

The observations and experiments with chloroform have been quite numerous since my attention, about three years ago, had been directed more particularly to its ready spontaneous decomposition, to which, contrary to the direct and indirect statements of Städeler, Hager and others, chloroform prepared from good alcohol is subject if its density exceeds a certain point. These statements do not attempt to prove that chloroform prepared from other material is alone subject to decomposition, but merely assert that, made from alcohol, it was found to keep well, which fact may be readily explained by low specific gravity and absolute dryness. My own observations prove that this tendency to change increases with the specific gravity, or, in other words, with the absolute chemical purity of chloroform, and the total absence or the presence of minute quantities of those compounds imparting a brown color to sulphuric acid, do not appear to make any difference whatever. The few observations made on this point seem to indicate that moisture will hasten the decomposition in the light.

The practical results derived from the foregoing are as follows:—

1. Chloroform of sp. gr. 1·475 and less will keep in dry or damp bottles, in diffused daylight and direct sunlight.

2. Chloroform of sp. gr. 1·480—1·484 will remain unaltered

in diffused daylight, and (for a limited period, at least) also in sunlight, if free from moisture; in the presence of moisture decomposition will set in, if exposed to sunlight.

3. Chloroform of 1·490 sp. gr. and above can be kept unaltered *only* in the dark; if decomposition should take place in the dark, it must have *commenced before* the total exclusion of light.

In view of these facts, there are but two ways for preserving chloroform for medicinal use: either to keep it totally excluded from the light from the moment it has been rectified, if the officinal specific gravity is adhered to; or to reduce it to about 1·475 by the addition of alcohol, as I have suggested heretofore.

The former alternative, I believe, has been adopted by several governments in Europe, where the pharmacist is now compelled to preserve it in dark closets and in black bottles, impervious to light.

In our country this care would scarcely appear to be necessary, since very few pharmacists rectify the chloroform they use in their practice, but rather leave it to the large manufacturer, who, to judge from specimens obtained without selection at various times from different sources, aim to get it of such a density that light has no effect on it. In my experience, the purified chloroform met with in our commerce is generally below 1·48; its density occasionally approaches 1·49, which point it very rarely exceeds.

A case has been related to me of the shipment to California of a considerable quantity of chloroform, a number of years ago, which arrived there in a damaged condition in consequence of spontaneous decomposition. This and similar occurrences may have directed the attention of our manufacturers to this point at an early date, and suggested to them the necessity of reducing the density of their product.

The rectification of chloroform, if intended for internal use, ought never to be omitted by the pharmacist. Our pharmacopœia allows the presence of a minute proportion of those compounds which react upon sulphuric acid, and upon careful examination but very little chloroform will be found in our market which is totally free from these compounds,—a fact which will be revealed by a careful distillation, leaving about one or two per cent. in the retort, which will almost always react very decidedly with concentrated sulphuric acid. This is due to the difficulty of destroying these compounds by sulphuric acid in operations on the large scale, which is completely effected only by very prolonged contact, and then probably—at least the last portions—with difficulty. If chloroform treated in this way is afterwards carefully rectified, the last portions of the distillate will usually react with sulphuric acid.

A re-rectification is easily accomplished, and without much trouble. The chloroform is introduced into a glass retort together with a wire coil, a thermometer is inserted, and the retort placed in a water-bath, which is rapidly heated until the chloroform boils, when the heat is sufficiently reduced so as to keep the temperature at about the same point, taking care not to let it rise above 67° C. (153° F.) The boiling point of chloroform varies with its density, and from accidental causes. Liebig states that chloroform of 1·480 sp. gr. boils in a dry retort at 60·8° C. (141·5° F.), but in the presence of water at 57·3° C. (135·14° F.) If the temperature is in no case allowed to rise over 67° C. (153° F.), the last portions of the foreign impurities are left behind, which, if present in minute proportion, may not be positively injurious, but which possess such a suffocating odor that their complete removal is at least very desirable. The temperature suggested here is a few degrees less than that recommended by Hirsch, but is sufficiently high for the distillation of pure chloroform.

For some time past I have, for reasons stated before, reduced the chloroform to the specific gravity 1·475. If 95 per cent. alcohol, in sufficient quantity for this purpose, is added to chloroform of a higher density, the mixture turns milky; and if it is now subjected to distillation even in the presence of dry carbonate of potassa, as directed by the pharmacopœia, a considerable and varying proportion distils over at first in a milky condition, and contains all the water, notwithstanding this liquid boils at about 33° C. (60° F.) above the boiling point of chloroform. The milkiness of the mixture is caused by the separation of water in minute globules; and, if it is allowed to rest, this water will soon rise to the surface, and may now be removed without trouble by means of a separatory funnel. This is by far the easiest method for reducing chloroform to any given specific gravity. Even if the pharmacopœia in a future revision should adhere to the purification of chloroform by means of concentrated sulphuric acid, it will be advisable to rectify this chloroform *per se* after the adhering acid has been removed by an alkali, and subsequently dilute it with alcohol, separating the water after it has collected on the surface.

I have never experienced any difficulty in regenerating chloroform which had acquired an acid reaction. Such chloroform was always made from ordinary alcohol, and had previously been rectified. If such an acidified chloroform was agitated with a solution of carbonate of soda, and subsequently distilled over a little unslaked lime, it was always obtained of an unexceptionable reaction. The same result was arrived at by diluting the chloroform with some alcohol, agitating them well together, and filtering the turbid mixture at once through a plain filter, covered with a quantity of dry carbonate of potassa. Chloroform regenerated in this way, and diluted to the specific gravity of 1·475, has kept in the diffused daylight, and even exposed to sunlight, without any perceptible change. If chloroform is prepared from other material than alcohol, the regeneration may probably be more difficult.

A slight acid reaction in chloroform is not readily ascertained by holding a piece of litmus paper in it, since the coloring matter of litmus is utterly insoluble in this liquid. The most minute acid reaction is best observed by evaporating spontaneously a few drops of chloroform with a drop of an aqueous solution of litmus, properly neutralized. A minute trace of acid will then change this color to a reddish tint, and no acid will be lost by and with the evaporation of the chloroform, since the aqueous litmus floats on the surface, just in the place where it is best calculated to absorb any acid which may be present.

Chloroform, I believe, is best kept in cork-stoppered bottles; it has no influence upon the cork, but, if it should acquire free acid, this would soon show itself by imparting to the lower end of the cork a yellow color, and softening its texture so that it readily crumbles to pieces when rubbed between the fingers.

ENNOMOS SUBSIGNARIA, OR THE MEASURING-WORM.

By Allen Shryock.

(An Inaugural Essay, presented to the Philadelphia College of Pharmacy.)

Class *Insecta*. Order *Lepidoptera* (Linn.) Tribe *Geometra* (Hübner).

General Characteristics.—Head roundish, furrowed above, and of a pale red color. The male and female are furnished with ten legs; six in front, which are horny and jointed, tapered, and placed beneath the first three rings of the body. The remaining four are placed beneath the extremities, and are thick, fleshy and jointed. The body is from six to twenty lines in length, and slate-colored. The imago is pure white on the upper side, with slight brown tips on the upper surface. The females are longer in body and wings, and are rather lazy. Both male and female have full use of their wings. The male antennæ is pectinated underneath to the tip; the female antennæ is filiform, notched beneath.

About the end of the first week in July the female deposits her eggs, usually numbering about fifty or more, upon the lower bark of the trees upon which they feed. They are most generally seen upon the different species of maple, but at times they are seen upon our fruit trees. After depositing these eggs they die, and by the middle of the next June the eggs are matured into the larvæ, which suspend themselves from the upper branches of the trees by a silk cord in the warm sun, which is their delight; at night they draw in the cord. They cause great havoc among the leaves. When in danger they remain for several hours in the same position, resembling the twig to which they are attached.

The tribe derives its name Geometra from the fact that its members measure (as it were) the ground over which they pass. They cast their skin several times during the season. The male larvæ of this particular type are the smallest, and most active. They are most abundant in large cities, in which they are justly regarded as a great pest; in the country they are much less common, as they are soon devoured by the birds. I have seen some few upon the oak in the south-central part of our State.

About the last of June they commence preparing for the change to the chrysalis state, previous to their final transformation, by weaving a cocoon among the leaves, in which they remain until the beginning of July. The chrysalis is about seven and a half lines in length; the body is rough and obtused before, and is acute behind, armed with six brown hooks. The case of the antennæ and wings are well marked, of a pale brown color, and are fastened by silken threads to the leaves. The imago appears as a white moth; the wings expanding about eighteen lines.

This species is sometimes called *Geometra niveo-sericearia*, or the snow-white silky geometer. The female is impregnated from two to five days after her emergence, and is quite inactive after delivery. The males live several days afterward. The eggs are of a green color, insoluble in water; they remain on the bark of the tree till the next June. They are about half a line in diameter, and at this time are of an olive color. They are compressed at the upper end, and are closed by an oval flattened lid.

Two parasitic insects feed upon these larvæ:

I. The Ichneumon fly, described by Guy in the first volume of the Boston Journal of Natural History;

II. The *Cryptus conquisitor.*

These worms are a great annoyance, not only with regard to the havoc which they cause among the leaves, but in consequence of the peculiar manner in which they suspend themselves; they are continually dangling in our faces, or cracking beneath our feet. Many remedies have been suggested for ridding our cities of these insects. The most efficient way is to shake the trees well when the caterpillars are in a state of suspension; or apply a mild alkaline solution upon the bark of the trees, which loosens the eggs, that are glued to the bark by a kind of fluid, ejected with them at the period of delivery.

Properties.—The larvæ are cineritious in color, very much wrinkled when dry. The head of a red color. The powdered larvæ are chocolate-colored, possessing a fœtid narcotic odor, also a slight bitter taste. Having treated the powder of the dark worms alone with various solvents, I give the following results:—

It is extremely soluble in glycerin, to which it imparts a rich amber color, and forming a perfectly transparent solution. It possesses a powerful fœtid odor, also a burning taste.

Diluted alcohol will not preserve them.

It is partially soluble in alcohol, to which it imparts a rich green color, a nauseous taste, and a characteristic odor.

It is slightly soluble in ether, imparting a perfectly clear amber color, but to which it yields no taste.

It is slightly soluble in chloroform, with which it forms a clear yellow solution, also tasteless. It is also sparingly soluble in fixed oils.

The epidermis is wholly insoluble in any of the above menstrua.

Chemical Properties.—The *Ennomos subsignaria* contains many interesting principles, but, being restricted to a very small amount of matter, my experiments have been very limited at present. Thus far I have found it to contain, 1, a crystalline principle; 2, a volatile oil; 3, a fixed oil; 4, a green coloring matter; and 5, a black coloring matter. There are also slight traces of tannic acid.

The crystalline principle is obtainable from the powdered worm. Having packed some in a glass funnel, percolate chloroform through it until the solution is colorless. Then set it aside to crystallize. One hundred grains of the powder yields about two grains of the crystalline matter. This, when obtained, is of a white color, both inodorous and tasteless; it is soluble in water, alcohol, ether and chloroform. To this crystalline matter I would give the name of subsignarin, as it is a neutral principle; its solution yields a light precipitate with tannic acid, acetate of lead, and bi-carbonate of potassa, turning cloudy on the addition of ammonia; no alteration perceptible upon the addition of iodo-hydrargyrate of potassium, nor with solutions of bichloride of platinum, sulphate of copper, or sulphate of zinc. There appears to be no change on the addition of nitric, hydrochloric or acetic acids; sulphuric acid forms a cloudy solution.

The volatile oil is obtained in the process of extracting the subsignarin; it is retained in solution by the chloroform, and is left as a residue after crystallization has been effected. It leaves a greasy stain upon paper, which may be removed on the addition of heat, thus proving its volatile character. It retains the narcotic odor of the worms, is amber colored, and also possesses an extremely bitter taste. It is very soluble in alcohol, and is of less density than water. It turns white and cloudy on the addition of nitric, hydrochloric or acetic acids; no precipitate with a solution of bichloride of platinum, ammonia, or sulphuric acid. Iodo-hydrargyrate of potassium produces a yellowish-white color.

The fixed oil may be separated by distilling the volatile oil with which it is impregnated; when cold it is semi-solid, and of a yellowish color. It leaves a stain on paper, not effaceable by ordinary heat.

The green coloring matter is most probably the same as that contained in the leaves of the tree upon which they feed,—chlorophyl.

The black coloring matter produces a stain when the worm is crushed beneath the feet, but it is entirely lost by age. There is a great deal of matter not soluble in the above-named menstrua, as the head, legs, epidermis, &c.

Medical Properties, Uses, and Doses.—Ennomos subsignaria, in any of the above forms, acts as an emetic in large doses; in much smaller ones as a slight narcotic, diuretic, and antispasmodic. The dose of the powder as an emetic is from ten grains to a half-drachm. In doses of from two to eight grains, two or three times daily, as a narcotic and diuretic. The dose of the oil is from two to five drops, to which it owes its emetic properties. The taste is retained in the mouth a considerable time after taking. The crystalline principle, which is tasteless, may be taken to the amount of one or two grains.

This agent might prove useful in diseases of the urinary organs, or derangement of the nervous system.

There are many tribes of the order *Lepidoptera* which are very poisonous, even to the touch, but this particular tribe *Geometra* seems to contain none of these properties. They are eaten by our common fowl, *Phasianus gallus*, to a great extent, and seem to produce no evident effect.

ON FRAZERA WALTERI (AMERICAN COLUMBO).

By Frank W. Thomas.

(Abstract of an Inaugural Essay.)

The *Frazera Walteri* is an herbaceous perennial plant, belonging to the Gentianaceæ. It varies in height from three to eight feet, has an erect stem, and has its leaves verticillated in whorls. The flowers are large and numerous, in a terminal panicle. The fruit is an oval flattened capsule, containing from four to twelve seeds.

The root, which is the part used in medicine, is fleshy, horizontal, and spindle-shaped, with but few lateral fibrous radicles. It has very little odor, and a sweetish bitter taste. The *Frazera* is indigenous to the western States, and is rarely seen east of the mountains, and prefers rich and moist lands.*

The author's aim has been to determine whether the tonic properties of American columbo are due to principles similar to those in the true columbo root.

A cold infusion of a pint from two ounces of the powdered root, by percolation, possessed a bright reddish-brown color and agreeable bitter taste, and a decided acid reaction. It was not affected by solution of corrosive sublimate, or by tannin, nor was its transparency affected by heat, and contains no albumen ; but it is abundantly precipitated by subacetate of lead.

Tincture of iodine produced no blue coloration when added to a decoction of the root after cooling.

When 500 grains of the root was digested in water fourteen hours, and the infusion acidulated with sulphuric acid, and then precipitated with ammonia, a whitish granular powder was obtained, tasteless and insoluble in alcohol, ether and water, and unaffected by a high heat.

The root yields pectic acid by the successive action of carbonate of soda and hydrochloric acid.

The ethereal tincture had a bright yellow color, and slightly bitter taste. This, on evaporation, yielded a fixed oil, resin, yellow coloring matter, and a wax-like substance insoluble in alcohol.

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* [We have seen it growing in great luxuriance on the bottom lands bordering the Ohio river above Wheeling, on the Ohio side.—Editor.]

The author, by distilling several portions of root with the same water, obtained an odorous liquid, entirely transparent, and not rendered milky by chloride of sodium, though less transparent. No particles of oil separating on standing.

A hydro-alcoholic tincture, on evaporation to dryness, was dissolved in six fluidounces of water, and the solution treated with subacetate of lead until it ceased to produce a precipitate. When the filtered liquid was deprived of lead by sulphuretted hydrogen, and evaporated, a residue of pure bitter extract remained.

A concentrated tincture, made with alcohol sp. gr. ·817 from eight ounces of the root, when reduced to four fluidounces by distillation, and set aside, deposited numerous acicular crystals of a bright yellow color, arranged in clusters, inodorous, agreeably bitter, insoluble in water, sparingly so in cold alcohol, but freely in alcohol when hot. These crystals, when laid on moist litmus paper, reddened it decidedly. Nitric acid dissolves them, producing a blood-red solution. They are not acted on by hydrochloric acid, but sulphuric and chromic acids both decompose them.

When the root was treated by the process for berberina, it did not afford an alkaloid, but only a resinous, acrid, bitter substance, insoluble in water, but soluble in alcohol and ether.

The alcoholic extract contains saccharine matter, and the ashes contain potassa, lime, magnesia, and oxide of iron.

From these results it is evident that *Frazera* is constituted quite differently from Columba, containing neither albumen, starch, nor berberina.

GLEANINGS FROM GERMAN JOURNALS.

By Prof. John M. Maisch.

On the Detection of Strychnia. Rieckher has isolated strychnia from a mixture of the heart, liver and lungs of a steer which had been kept in loosely covered bottles for eleven years and five weeks, and undergone putrefaction during that time. He gives the following results of his investigations:

1. The presence of strychnia may be proven by its intensely

bitter taste; by the yellow crystalline sparingly soluble precipitate with bichromate of potassa, and by the intense violet color of the chromate of strychnia, produced by concentrated sulphuric acid.

2. A proper modification of the process of Stas and Otto consists in the substitution of ether by benzin or chloroform for dissolving the strychnia.

3. Dragendorff's observation is corroborated, that acidulated dark colored aqueous solutions yield some of their coloring matters to benzin, but strychnia is dissolved by this menstruum only after the addition of alkali in excess.

4. Benzin or chloroform is readily recovered by distillation; amylic alcohol—recommended by v. Uslar and Erdmann—must be evaporated.

5. To detect strychnia in different mixtures, the methods of Stas and Otto are recommended; the use of subacetate of lead and sulphuretted hydrogen is to be avoided.—*Neues Jahrbuch f. Pharm.* 1868. *Jan.* 1—9.

Reduction of Chloride of Silver. Dr. Græger recommends for this purpose to dissolve the silver in ammonia and add from time to time some pieces of zinc; the gray powder is washed and digested with concentrated muriatic acid until it becomes whitish, when it is washed with distilled water and a little ammonia, whereby it becomes perfectly pure. Nitrate of silver in ammoniacal solution is reduced by the same process; if it contains copper, it is advisable to leave a little silver solution, so as to avoid the precipitation of copper.—*Ibid.* 9—14.

Testing Vinegar. W. A. Herb has constructed an acetometer, consisting of a small tube for measuring the requisite quantity of vinegar, and a burette to be used with clear lime water; every 10 degrees of the burette indicate 1 per cent. acetic acid.—*Ibid. Febr.* 89—92.

The constituents of Tormentilla have been examined by Rembold. The tormentilla red has the same composition as rhatany red; it is obtained by boiling the tannin of tormentilla with sulphuric acid, and appears to be identical with the red of chestnuts, since, on being fused with caustic potassa, proto-catechuic acid and phloroglucin are formed. Kinovic acid is obtained from the root by boiling it with milk of lime and adding muriatic acid to the decoction. The precipitate is boiled with a solution of baryta, the filtrate decomposed by muriatic acid, the precipitate dissolved in alcohol, decolorized with animal charcoal, and the alcohol partly recovered by distillation, when kinovic acid separates as a crystalline powder.—*Annal. d. Ch. und Ph.* cxliv, 5.

Gentian for Bougies. Prof. F. Winkler, of Rostock, recommends gentian as a dilatatory of the vagina and uterus, and for various other purposes. It is cheap, may be obtained of any required thickness, does not swell excessively, and does not acquire a disagreeable odor if impregnated with mucus and pus.—*Deutsche Klinik*, 1867. *No.* 29.

Charta Sinapinata of Rigollot. Sized paper is covered with a solution of caoutchouc in bisulphide of carbon or with a thin solution of resin. It is then covered with fine, well-dried powder of black mustard deprived of its oil, and passed between two cylinders. Rigollot's paper has a stratum of mustard ·7 millimetres in thickness, which adheres well and does not peel off on bending.—*Pharm. Central Halle*, 1867. *No.* 38.

Opodeldoc Chloroformatum (Linimentum saponato-chloroformatum):
℞ Saponis butyrini sicci, p. 2.
Solve digerendo in Alcoholis fort., p. 20.
Liquori filtrato adde chloroformi, p. 3.
—*Ibid. No.* 41.

Pure Carbonate of Lime is obtained by Dr. Græger by slaking burned lime and digesting it with a solution of nitrate of ammonia, leaving the lime somewhat in excess. The liquid contains only nitrate of lime and free ammonia, none of the impurities found in lime being dissolved. Carbonic acid gas, if passed through the solution, precipitates pure carbonate of lime as a dense crystalline powder. It is advisable to add to the liquid a little carbonate of ammonia before filtering it. The filtrate is neutralized with nitric acid, if necessary, and serves again for dissolving burned lime. The only expense occurs from the generation of carbonic acid.—*N. Jahrb. f. Ph.* 1858, *March*, 158.

Vaccination a Prophylactic against Cholera. Dr. H. Otto, of Buckau, near Magdeburg, recommends vaccination with the virus of cow's pox as the surest prophylactic against cholera. The town of 8000 inhabitants was visited by the small-pox from December, 1865, to July, 1866, and by the cholera from August 25 to October 10, 1866, with 550 cases and 160 deaths from the latter. Children, up to three years of age, once vaccinated, remained free from cholera; not a single case of cholera occurred amongst those vaccinated the same year, or who had been attacked by variola or varioloids. The fact is certainly remarkable that amongst 500 persons, revaccinated by Otto, not a single case of cholera occurred. "Vaccination with quassia as a prophylactic against cholera has not given the expected result."—*Pharm. Central H.* 1867, 343.

Detection of Ergot in Flour. Berlandt objects to the recognition of ergot from the odor evolved by the action of caustic potassa upon the flour, and recommends the decomposition of propylamin ($C_6H_9N = 2C_2H_4 + C_2NH$) into marsh gas and hydrocyanic acid as perfectly accurate. 1 part of the flour, 1 caustic potassa, and 6 water are introduced into a small flask, which is connected, first, with a chloride of calcium tube, and then with a combustion tube of 5 mm. diameter, placed in a combustion furnace; this tube is connected with a Liebig's potassa apparatus containing distilled water. The combustion tube is first heated to redness, then the flask is heated for half an hour, while the potassa apparatus is kept in ice. This liquid is afterwards mixed with sulphide of ammonium, evaporated to dryness and dissolved in little water. A few drops of this solution produce, with a drop of dilute sesquichloride of iron, a blood-red color, in consequence of the formation of sulphocyanide of iron.—*Archiv d. Pharm.* 1868, 382.

Copain Mège de Jozeau is prepared by adding concentrated nitric acid to copaiva until effervescence ceases; the mass is then washed with water to remove all acid reaction. Ten parts of this are mixed with one part each of cubebs, bicarbonate of soda and calcined magnesia, made into a mass with mucilage, and formed into oval pills, which are coated with colored sugar. (Ph. Cent. Halle, 1866, N. 52).

Sulphurous acid may be prepared, according to Franz Stolba, by heating in a glass retort a mixture of 10 parts sulphur with 24 p. anhydrous proto-sulphate of iron. The gas is very pure; a little sulphur is readily separated by passing it through loose cotton, and the residue is useful for generating sulphuretted hydrogen; other metallic sulphates may be used in the same way. (Ph. Cent. Halle, 1866, N. 52).

Paraguay tea. D. A. Strauch has again analyzed these leaves, with the following results: theina ·450, volatile oil a trace, caffeotannic acid 20·880, gum 2·830, resin, chlorophyll and wax 5·902, starch 1·200, protein compounds 9·361, cellulose 22·148, apotheme 8·640, salts 3·896, water 8·100, sand and extractive. (Wittst. Viertelj., 1867, 167—182).

ON THE PREPARATION OF CHLORIDE OF POTASSIUM FROM THE CARNALLITE OF STASSFURTH, PRUSSIA.

By M. Stromeyer.

It is well known that the pure rock salt is covered in that neighborhood by a large bed of impure salt ("refuse" salt), in which are contained, besides many other interesting minerals, two substances in considerable amount, which are useful in the arts—kieserite, a sulphate of magnesia with one atom of water, and carnallite, a hydrated double salt of chloride of magnesium and chloride of potassium ($K\,Cl + 2Mg\,Cl + 12\,HO$). These two chlorides are united by so weak an affinity as to be readily separated by dissolving them in hot water, when, on cooling, the chloride of potassium crystallizes out, and the chloride of magnesium remains in solution. When, also, the double salt is drenched with a little cold water, or is exposed to moist air, the chloride of magnesium is dissolved out, and the chloride of potassium left behind. This double salt, which had been found by Liebig some time ago in the mother liquor of a certain saline, affords a very convenient material for the preparation of chloride of potassium. Chloride potassium has for some time been used in the conversion of the nitrate of soda from Peru into saltpetre, and for the manufacture of potash alum. It was obtained from the ashes of kelp, particularly at Cherbourg, in France, and at Glasgow, Scotland, and in large quantities at the sea-salt salines of Camargue, in the south of France, by the process of Balard. It is, however, obtained from carnallite so much more cheaply that it already competes in Paris with the French article, and threatens entirely to supersede it.

Carnallite is found at Stassfurth in inexhaustible quantities. The superficial extent of the bed of "refuse" salt is estimated to be 450 square kilometres, in which the strata, consisting chiefly of carnallite (containing about 60 per cent.) has a thickness of 19 metres.

The small portion of the bed which has been opened at Stassfurth and Anhalt already assures to the business of manufacturing chloride of potassium an almost unlimited future. Unfortunately, however, the business has been driven with feverish speed—18 manufactories have been erected there—so that the demand for saltpetre and alum cannot absorb the production. It has therefore been necessary to seek other uses for it. What first presented was the conversion of the chloride of potassium into carbonate of potassa (potashes), which can be accomplished in the same manner as chloride of sodium is converted into carbonate of soda. The chloride of potassium may be changed to sulphate of potassa by heating it with sulphuric acid. This may then be roasted with carbonate of lime and charcoal, by which sulphuret of calcium and carbonate of potassa are produced, the latter of which may be removed by water. In the south of France a large amount of carbonate of potassa is obtained in this way. Sulphuric acid, however, is not used there to convert the chloride of potassium into sulphate of potassa, but this is done by means of sulphate of magnesia. The mother liquors of the sea-salt afford, by evaporation in the air, in the first place, an almost pure chloride of sodium, then a mixture of sulphate of magnesia and chloride of sodium, and finally a very impure chloride of potassium. Considerable quantities of the two last deposits are dissolved in boiling water, so that one atom of chloride of potassium comes into contact with more than two atoms of sulphate of magnesia; upon cooling, a double salt of sulphate of magnesia and sulphate of potash crystallizes out, in beautiful large crystals (MgO,SO_3+KO,SO_3+6HO), while chloride of magnesium is formed at the same time. This salt is decomposed by further solution in hot water into sulphate of potassa, which crystallizes out, and sulphate of magnesia which remains in solution. This decomposition does not take place so readily as that of carnallite; at the same time, by two crystallizations, a salt containing 80 per cent. of sulphate of potassa can be obtained, which is rich enough to be roasted with carbonate of lime and charcoal.

This process may possibly be preferable, even at Stassfurth, to the treating of the chloride of potassium with sulphuric acid, since the chloride of potassium occurring there contains from 15 to 20 per cent. chloride of sodium and other salts, and therefore would afford a potash containing much soda, while by the French process the chloride of sodium is separated. The manufacture of potashes has not yet begun at Stassfurth, but Vorster and Grüneberg prepare a sulphate of potash of different degrees of purity for farmers. They keep their process secret, but, however, make use of sulphate of magnesia, which the kieserite (MgO,SO_3+HO) abundantly found there affords.

It is well known that plants need potash, which is, indeed, found in their ashes. Although it appears that most soils are richly charged with it, yet but little of it exists in such a form as to be readily assimilated by the plant. It exists generally in the soil as feldspar (silicate of alumina and potash), which is with difficulty attacked by the strongest mineral acids. By the action of the weather the potassa is of course extracted from it, but by a slow process. Formerly, when the land was left to lie fallow, this answered the purpose; but with the present increased population and more exhausting cultivation this will do no longer. Hitherto attention has been mainly given to the addition of nitrogen and phosphoric acid, but it will soon be necessary to restore to the soil the potassa also which has been removed from it.

A soil which has grown clover for some years soon yields a poor harvest. The ashes of clover, then, show but about one-tenth of their former proportion of potash, and a soil which had contained 13·4 parts potassa in 10000, then, has but 3 parts. In the cultivation of the sugar beet it has been often observed that, notwithstanding the liberal addition of phosphoric acid, the amount of sugar in the beet suddenly falls off, because the soil had lost so much potassa. It is now not essential to put carbonate of potassa upon the land, although this occurs chiefly in the ashes of plants. A soil containing alumina and lime has the wonderful property of taking up sulphate of potash and chloride of potassium and rendering them insoluble in water, while the acids combine with the lime or magnesia in the soil. But since chloride of calcium and chloride of magnesium pass into the juice of the beet, and obstruct the clarifying of the sugar, it is better to apply the sulphate of potassa instead of the chloride of potassium, since the sulphate of lime thus produced does not have an injurious influence, but, on the contrary, is of advantage, since it affords to the plant the necessary sulphur, retains the ammonia, and changes the silicate of potassa in the soil into soluble sulphate of potassa. It is therefore to be desired that the application of sulphate of potassa may be encouraged, since the business at Stassfurth may thus be helped, and the deposit in that place become a blessing to agriculture.

Carnallite looks very much like rock salt, but is generally colored red by oxide of iron. When it is exposed to the air it deliquesces, and cannot therefore well be preserved. It is consequently stored in the mine, which fortunately is of ample dimensions. The quantity wanted in the factories is ordered day by day, and sent directly to the dissolving vessels, in covered cars by railway. A few manufacturers use the carnallite coarsely ground. The grinding is done under the care of the director of the mine, and large iron mills, like coffee mills, of four-tenths of a metre in diameter are used. One such mill in 24 hours will grind about 30 tons, of 1000 kilogrammes each. A sample is taken from each car load, and its percentage of chloride of potassium ascertained. The factories received in 1864, from the two mines at Stassfurth and Anhalt, 125,000 tons of carnallite, which had the following average composition :

Chloride of potassium,	17·5	per cent. (15—20.)
Chloride of sodium,	22·	
Chloride of magnesium,	23·5	
Sulphate of magnesia,	9·	
Water,	28·	
	100·	

The selling price varies according to the amount of chloride of potassium. A salt containing 18 per cent. is called rich, one of 15 per cent. is of common quality. In 1865 the rich salt cost, in lumps, 21 francs 25 centimes per ton; the common, 23 francs 15 centimes.

These prices lasted for some months, when a reduction of two francs took place. By later accounts, the Prussian government, in accordance with that of Anhalt, have reduced the price of the average salt in lumps to 12 frcs. 50 cent. (1866).

Only the chloride of potassium has as yet been obtained from the carnallite; the chloride of magnesium is lost. The process consists of the following operations:

1. The treatment of the carnallite with hot water in sufficient quantity, by which chloride of potassium and chloride of magnesium are chiefly dissolved, and the largest part of the chloride of sodium and sulphate of magnesia remain undissolved.
2. The crystallization of the chloride of potassium by cooling.
3. The evaporation and cooling of the mother liquors, by which a second crop of crystals of chloride of potassium is obtained.
4. Further evaporation and cooling of the mother liquors, by which a double salt of chloride of potassium and chloride of magnesium is obtained ($KCl + 2MgCl + 12HO$). This is then treated as the natural salt.
5. Washing, drying and packing of the chloride of potassium.

The chloride of potassium purified by washing is quickly dried in an oven, where it undergoes a slight calcination, or upon the metallic floor of a chamber which is heated by tubes, through which the hot air from a coal fire is drawn.

After drying, the salt is collected, sifted, and packed in casks holding about 500 kilogrammes. They are loaded in the factories upon the cars of the Magdeburg Railroad, and sent to the different European markets.

The whole number of factories of Stassfurth and Anhalt produced, in 1864, 16,500 tons of chloride of potassium.

In the beginning of 1863 100 kilogrammes of chloride of potassium of 80 per cent. were worth, at Stassfurth, 40 francs. In the early part of 1865 the price had fallen to 29 francs, and by the end of the same year to 18 francs 70 centimes.

It is very evident that the production of chloride of potassium at Stassfurth will soon make competition with it impossible, and that the markets of Europe will be chiefly, if not exclusively, supplied from thence.—(Condensed from an article by Stromeyer, in *Dingler's Polytechnisches Journal*, vol. clxxxi, p. 376, for Am. Jour. Pharm.—G. J. S.)

CHLOROFORM NOT DECOMPOSED BY SUNLIGHT.

By Dr. H. Hager.

In previous volumes of the "Pharmac. Central Halle," I have repeatedly expressed my doubts regarding the decomposition of chloroform by sunlight; I have also stated, that the decomposition of chloroform has been observed when daylight was excluded, and that the cause of this spontaneous decomposition is to be looked for only in the presence of higher chlorine substitutions. This last view is perfectly justified by the fact that this spontaneous decomposition has been observed only in chloroform of very high specific gravity.

After the decomposition of chloroform had thus been repeatedly reported, I was surprised by the order of the Prussian Ministerium of July 9, 1867, requiring the chloroform to be kept not only in blackened bottles, but likewise in a dark place. I was induced to make several experiments, which gave the following results:

1. Chloroform of 1·490—1·493 spec. grav. is neither altered or decomposed by diffused or direct sunlight, between 16° and 18° C.

2. Chloroform of the same gravity, in contact with air, is not altered either by direct or diffused sunlight.

3. Chloroform of a higher specific gravity than 1·495, in contact with air, has a great inclination to decomposition, which, at a temperature of about 20° C., proceeds gradually in the dark, but more rapidly under the influence of direct sunlight.

The experiments which warranted these conclusions were performed by keeping several commercial specimens of chloroform in white glass bottles, entirely and partly filled, in the dark, in diffused daylight, and in the direct sunlight.

Chloroform of 1·490 to 1·492 spec. grav. did not show the slightest alteration under these circumstances. The influence of the direct sunlight could be had almost without interruption from 9 A. M. to 5 P. M. These specimens of chloroform were unaltered after an insolation of three weeks, in the filled as well as half-filled bottles; likewise in the bottles kept in the dark and diffused light.

Chloroform of spec. grav. 1·496—1·499, directly exposed in half-filled bottles, began to show the decomposition already on the second day, for a glass rod, moistened with ammonia, produced white clouds, particularly on the bottle containing chloroform of 1·499. On the third day, the vapor of this chloroform was so irritating that an examination by smelling could not be risked. The same chloroform, in entirely filled bottles, showed only, after five days' insolation, an alteration recognizable by its odor; and this may be explained by the insufficient exclusion of the oxygen of the air, since the bottles had repeatedly been opened to be examined. A small bottle was completely filled with warm chloroform of 1·499 spec. grav. and then hermetically closed. After an insolation of eight days it showed not the slightest alteration, which, however, commenced the day following the opening of the bottle.

The specimens kept in diffused daylight and in half-filled bottles differed from the above, for only that of 1·499 spec. grav. showed, after three weeks, an alteration and incipient decomposition.

Of the specimens kept in the dark in half-filled bottles, the chloroform of 1·496 spec. grav. showed an unimportant acid reaction, but strangely not the chloroform of 1·499 spec. grav. But a sample of the same, kept with the same precaution at a temperature of about 20° C., was in the state of complete decomposition. The specimens filled warm into bottles and these hermetically sealed, were all unaltered.

A sample of chloroform, which had undergone spontaneous decomposition, but had been restored as well as possible by treatment with carbonate of alkali and repeated rectification, underwent decomposition in half-filled bottles after an hour's exposure to the sunlight; even after keeping it in a cool dark place for two weeks, it was undergoing complete decomposition.

The decomposition of chloroform of high specific gravity, according to these experiments, appears to be caused by the oxygen of the atmosphere. The gaseous products of decomposition in these cases were principally hydrochloric acid and chloro-carbonic oxide (COCl.)

Good chloroform, according to these experiments, is not decomposed in contact with the sunlight and air; therefore, the direction: "In vasis denigratis, bene clausis et loco obscuro caute servetur," is unnecessary for good chloroform of the officinal specific gravity, and troublesome to the apothecary. It has some value in regard to chloroform of a higher specific gravity, because its decomposition occurs sooner under the influence of light; but it is superfluous, because the decomposition of such chloroform is not prevented by the exclusion of the light. It would have been more correct to insist on the keeping, by the apothecaries, of chloroform of the officinal specific gravity, and thus to compel the druggists to sell only such chloroform.

It appears to me even very appropriate to adopt officially the reaction of the sunlight upon chloroform, for it is, without question, the surest test, which has only the single fault, that with us (in Berlin) it is scarcely practicable during the winter for the want of sunny warm days.

I disapprove entirely of the use of blackened bottles as shop bottles, because they are unsightly and require great care in filling and pouring out. They might be replaced by a more appropriate arrangement.

Whence and from whom the opinion or assertion originated, that chloroform is decomposed by the sunlight, I could not ascertain. But it came hardly from a competent source, and it is therefore to be regretted that it has received unqualified credit. —*Pharm. Central Halle*, 1867, 241—243.

Remarks.—In the essay, published in this number of the Journal, I believe to have shown that my experiments were made with pure chloroform, which Dr. Hager has *not* proven. Our summer temperature frequently exceeds 35° C. in the shade, and this difference in the temperature may account to a certain extent for his different results. The best refutation of his opinion is to be found in the fact that a chloroform, which, in our latitude, will keep unaltered during the winter, will not keep during the summer, if of sufficiently high specific gravity; also that chloroform of a lower specific gravity will not stand the light and temperature of our summers, if its specific gravity is raised sufficiently by careful rectification over chloride of calcium; also that pure chloroform, kept over concentrated sulphuric acid, will decompose in the light, but not in the dark; and finally, that pure chloroform, which has a tendency to decompose spontaneously, will keep unaltered if its specific gravity is sufficiently reduced by the addition of alcohol. Notwithstanding I have now in my possession chloroform of 1·484 spec. gravity, which has kept unaltered in diffused daylight for three years, I advocate a reduction of the specific gravity of officinal chloroform to 1·475—1·480, because that—if otherwise pure—will withstand the decomposing influence of light and heat, as we experience it. Hager examined the chloroform with which he experimented merely by its odor and with a glass rod moistened with ammonia; I invariably tested for an acid reaction by evaporating the exposed chloroform spontaneously over a carefully neutralized solution of litmus, and whenever moisture had separated upon the chloroform, this was brought in contact with the litmus. In several series of experiments I added the solution of litmus directly to the chloroform, leaving the two liquids in contact during the experiment. J. M. Maisch.

ON SYRUP OF THE PHOSPHATES OF IRON, QUINIA, AND STRYCHNIA.

St. Louis, June 18, 1868.

Professor Procter:

Dear Sir:—Some time since I had occasion to prepare Dr. Aitken's syrup of the phosphates of iron, quinia, and strychnia, and, although the operation was performed in strict accordance with the formula, as laid down in your journal, the result was far from being satisfactory, and gave subsequently much annoyance by the exceedingly objectionable instability of the preparation. The process, so far as preparing the aqueous solution of the phosphates, presented no very serious obstacles, but the attempt at combining this with the sugar utterly failed. The solution of the phosphates, already containing some sugar, was filtered directly upon the remaining sugar contained in a bottle, and the mixture shaken occasionally until the sugar was dissolved. During this operation a dense and very permanent foam was formed, equal in bulk to the solution, and otherwise remarkable for the readiness and abundance in which it could be produced, even by slight commotion, and which, after filtration of the syrupy solution, remained without much diminution of bulk upon the filter for several days, and was then thrown away.

The liquid, during the solution of the sugar, deposited a bulky gelatinous sediment, which had at first a white appearance, but possessing, when more compact, a bluish tinge. The formation of this deposit seemed to be continuous, as, after repeated filtration of the liquid, the gelatinous precipitate still appeared, and, although accumulated in abundance at the bottom, the liquid above never became clear, as portions of the precipitate remained constantly disseminated throughout the whole.

This precipitation may have its limit when, after the greater portion of the iron has become insoluble, a highly acid salt still remaining in solution in the now superabundant excess of phosphoric acid. This view seems plausible from the fact that, after an abundance of the deposit has been removed, the subsequent formation of it is more moderate and somewhat different in character. For instance, on the liquid, which immediately after filtration is perfectly transparent and strongly exhibits the peculiar tinge characteristic for solutions of the quinia salts, a pellicle begins to form, which, when sufficiently heavy, breaks up, and the fragments floating about in the liquid are gradually deposited. But from the commencement no moderate excess of citric or phosphoric acid will prevent or redissolve the precipitate.

A portion of the syrupy solution before filtration, with the addition of more sugar, was heated, contrary to directions, with a view to avoid the production of foam, and to dissolve the deposit, but this only had the effect to augment the voluminous deposition.

A quantity of the syrup, later obtained from Mr. Aitken himself, and which was contained in dark bottles, exhibited the same bulky gelatinous deposit, the supernatant liquid being transparent and of a reddish-brown tinge. This comparison conclusively demonstrates that the ill success attending its preparation is the consequence of a fallacious formula, and not the result of unskilful manipulation.

Being recently called upon to prepare the syrup again, I proceeded in a somewhat different manner than the formula implies, although aiming at a result to be identical with that of the requirements. The first attempt was to procure an aqueous solution of the phosphates in a sufficiently concentrated state without heat—at the same time avoiding the unnecessary excess of phosphoric acid of the formula—that would admit of admixture with a sufficient quantity of syrup previously prepared, and form a syrup of greater density than that of the formula, and at the same time evading the formation of that persistent foam. The operations in view were to prepare the phosphates of iron and quinia without precipitation, thereby avoiding the oxidation of the protoxide of iron, and the unnecessary bulk of the solution consequent upon precipitation and re-solution. The phosphoric acid here employed is the monobasic or metaphosphoric (PO_5HO).

278 gr. of protosulphate of iron ($FeO, SO_3 7 HO$) will produce, with 358 gr. of phosphate of soda ($2 NaOHO, PO_5 24 HO$), 152 gr. of phosphate of iron ($2 FeO, HO, PO_5$), which contains 80 gr. of metaphosphoric acid; but to dissolve this 198 gr. more of metaphosphoric acid must be added, that is 278 gr. of metaphosphoric acid must be present to effect complete solution (Parrish, Roberts' Formula).

Therefore 1000 gr. of protosulphate of iron converted into phosphate of iron (546·76 gr.)

$$2(FeO, SO_3 7 HO) : 2 FeO HO PO_5 :: 1000 : (\ )$$
$$278 : 152 :: 1000 : 546{\cdot}76$$

requires the presence of 1000 gr. of metaphosphoric acid to retain it in solution. The iron in this solution is assumed to be in the state of superphosphate ($FeO 2 HO PO_5$). But the quantity of superphosphate of iron, 899·28 gr.,

$$FeO SO_3 7 HO : FeO 2 HO PO_5 :: 1000 : (\ )$$
$$139 : 125 :: 1000 : 899{\cdot}28$$

here represents only 575·54 gr. of metaphosphoric acid,

$$\begin{array}{ccccccc} \mathrm{FeO,\ 2\ HO\ PO_5} & : & \mathrm{PO_5\ HO} & :: & 899{\cdot}28 & : & (\ ) \\ 125 & : & 80 & :: & 899{\cdot}28 & : & 575{\cdot}54 \end{array}$$

which is all that is requisite to form a soluble salt; the remaining 424·46 gr. of metaphosphoric acid must therefore be excess.

To convert 1000 gr. of protosulphate of iron into superphosphate, 347·73 gr. of tribasic phosphate of lime, $3CaO\ PO_5$, also in the condition of superphosphate ($CaO\ 2HO\ PO_5$, 787·44 gr.) must be employed for the removal of the sulphuric acid, as sulphate of lime ($CaO,\ SO_3\ 2\ HO$).

$$\mathrm{CaO,\ 2\ HO\ PO_5 + FeO\ SO_3\ 7\ HO = CaO,\ SO_3\ 2\ HO + FeO\ 2\ HO\ PO_5 + 5\ HO.}$$

$$\begin{array}{ccccccc} \mathrm{3(FeO,\ SO_3\ 7\ HO)} & : & \mathrm{3\ CaO,\ PO_5} & :: & 1000 & : & (\ ) \\ 417 & : & 155 & :: & 1000 & : & 347{\cdot}73 \\ \mathrm{3\ CaO\ PO_5} & : & \mathrm{3(CaO\ 2\ HO\ PO_5} & :: & 347{\cdot}73 & : & (\ ) \\ 155 & : & 351 & :: & 347{\cdot}73 & : & 787{\cdot}44 \end{array}$$

But 347·73 gr. of tribasic phosphate of lime already contains 179·47 gr. of metaphosphoric acid,

$$\begin{array}{ccccccc} \mathrm{3\ CaO\ PO_5} & : & \mathrm{PO_5\ HO} & :: & 347{\cdot}73 & : & (\ ) \\ 155 & : & 80 & :: & 347{\cdot}73 & : & 179{\cdot}44 \end{array}$$

so then only 820·53 gr. additional of metaphosphoric acid will be necessary to complete the required 1000 gr. In this 820·53 gr. of metaphosphoric acid, first dissolved in 5 f℥ of water, dissolves the tribasic phosphate of lime with the aid of heat; to the hot solution then add the protosulphate of iron in powder; when this has been dissolved and decomposed, filter to separate the insoluble sulphate of lime, and when the liquid has ceased to pass, wash the residue several times with small quantities of water. The filtrate now contains the whole of the iron as superphosphate, together with the excess of metaphosphoric acid.

Mr. Aitken's formula for 24 f℥ of the syrup, provides as follows:

Protosulphate of Iron, . . .	300 gr.
Phosphate of Soda, . . .	480 gr.
Sulphate of Quinia, . . .	192 gr..
Strychnia, ...	6 gr.
Sugar, ...	14 ℥
Diluted Phosphoric Acid, U. S., .	14 f℥

Accordingly, a solution of superphosphate of iron, representing 1000 gr. of protosulphate of iron, as above described, converted into a syrup of the phosphates, to represent the proportional quantities of quinia and strychnia of the preceding formula, would produce 80 f℥ or 5 pints of syrup, with the following requisitions:

Sulphate of Quinia, ...	640 gr.
Strychnia, ...	20 gr.
Sugar (as Syrup U. S. P. f℥ 57·04), .	46⅔ ℥
Water, sufficient.	

All that remains now to complete the syrup is the conversion of the alkaloids into phosphates, and their incorporation with the iron solution and the syrup. To prepare the strychnia phosphate requires simply mixture with the iron solution, in which it readily dissolves. But in case of the quinia salt, as the formula precludes the combined sulphuric acid, this must first be removed, which is easily effected by conversion into sulphate of lime by double decomposition with a solution of superphosphate of lime. To accomplish this 75·84 gr. of tribasic phosphate of lime, in the state of superphosphate, is necessary.

$$\begin{array}{ccccccc} 3(N_2C_{40}H_{24}\ O_4,\ SO_3 8HO) & : & 3\ CaO\ PO_5 & :: & 640 & : & \\ 1308 & : & 155 & :: & 640 & : & 75{\cdot}84 \end{array}$$

The tribasic phosphate of lime may now be dissolved in a sufficient quantity of a hot solution of metaphosphoric acid, the sulphate of quinia added and, after complete decomposition, filtering, and the filtrate mixed with the iron solution and the syrup. This operation of separately preparing the phosphate of quinia may be advantageously dispensed with, and the whole process much abridged by transforming the sulphate of quinia simultaneously along with the protosulphate of iron into phosphate, employing the necessary amount of tribasic phosphate of lime, in the condition of superphosphate, to render the decomposition of the two sulphates complete. This process is executed as presented below:

Protosulphate of Iron, . .	1000 gr.
Tribasic Phosphate of Lime, .	423·57 gr.
Metaphosphoric Acid, . .	781·32 gr.
Sulphate of Quinia, . .	640 gr.

Strychnia, ...	20 gr.
Syrup, ...	O 4½
Water, sufficient.	

Dissolve the metaphosphoric acid in 5 f℥ of water, heat the solution, and add in succession the tribasic phosphate of lime, the sulphate of quinia, and sulphate of iron; after the last addition continue the heat for a few moments and filter. After washing the residue on the filter several times with small portions of water, add the strychnia to the filtrate, and when this has dissolved mix the solution immediately with the syrup.

Thus far the proposed process is a decided success, and an unquestionable improvement in every respect. The complete solution of the phosphates is effected with less than half the prescribed quantity of phosphoric acid. The oxidation of the protophosphate of iron is perfectly prevented (as oxidation by precipitating and washing is unavoidable) and the loss of quinia, by a similar process, is wholly obviated. Hence, practically considered, no loss whatever is incurred in the proposed process, as the crystalline nature of the residuary sulphate of lime permits of almost perfect removal of the dissolved phosphates with a comparatively small quantity of water. And subsequent loss is further avoided by the employment of syrup, thereby yielding a much denser product. But the characteristic feature that condemns this preparation as a failure is its proneness to deposition, which in either process is precisely similar, and in this respect the presence of sugar apparently exercises no preventative influence. The solution of the phosphates without sugar, and tolerably concentrated, retains its transparency for several days, but upon dilution with either water or syrup precipitation immediately occurs. It is very evident, by reverting to previous illustrations, that even a great excess of phosphoric acid does not possess the capacity to preserve the permanency of the solution. Then the direct inference is at once apparent that the excess is superfluous and altogether unnecessaay, and from an economical point of view may consequently be excluded from the formula. Then, after reconstruction, the formula for a solution of superphosphate of iron, containing 1000 gr. of metaphosphoric acid and free from excess of the latter, may be assumed as follows:

Protosulphate of Iron, . .	1737·49 gr.
Metaphosphoric Acid, . .	666·67 gr.
Tribasic Phosphate of Lime, .	645·83 gr.
Water, sufficient.	

The manipulations here are in all respects similar to those previously described. The result is a deep green, dense but mobile liquid, which remains permanent for several days, but then becomes subject to the same changes, which take place immediately when much diluted. Addition of excess of ammonia to this solution occasions a bulky greenish-white precipitate, which is again partially dissolved to an intensely green solution, but wholly upon exposure, and only after some time, to a dark-brown liquid. If the solution, previous to the addition of ammonia, has been acidulated with citric acid, no precipitate occurs, but a magnificent emerald green coloration is imparted to the liquid. A similar result is obtained by the addition of citrate of ammonia to the precipitate produced by the previous addition of ammonia to the liquid, but this is again considerably relieved by a sufficient excess of the citrate. If a strictly neutral or slightly acid solution of citrate of ammonia is added to the solution of superphosphate of iron, the transparency of the solution remains unaffected—an immaterial deepening of the color is the only apparent result. The mixture with a sufficiency of citrate of ammonia may be evaporated to a syrupy liquid, from which the dry double salt can readily be obtained in permanent light-green scales, readily and completely soluble in water, and possessing a sweetish pleasant saline, not metallic, taste. The solution of this citrophosphate of iron and ammonia, either with or without an excess of ammonia, will not bear evaporation in contact with sugar—the mixture speedily becoming intensely brown. But when containing no free ammonia it may be mixed with syrup in any proportion—an elegant light-green and permanently transparent syrup being the result. Now, if to the syrup of the phosphates, prepared in pursuance of the proposed formula, or if to the solution, before its admixture with syrup, a neutral solution of citrate of ammonia containing 1000 gr. be added, a beautiful light-green, dense, and permanent syrup will be obtained, which surmounts all those exceedingly perplexing obstacles, and leaves nothing to be desired by even the most fastidious.

Very respectfully, yours, A. S.

IODINE AND CARBOLIC ACID.

By Charles Bullock.

A solution, containing iodine, carbolic acid and glycerin, has been introduced to the medical profession by Dr. Percy Boulton, who claims for it therapeutic virtues of superior efficiency.

Dr. Boulton's solution is prepared as follows:

℞	Tinct. Iodini Comp.,	♏ xlv.
	Acid Carbolic Cryst. (fusa),	♏ vi.
	Glycerinæ,	ʒ viii.
	Aq. Destillat.	℥ v.

The iodine color gradually disappears, and the solution eventually becomes colorless. The time necessary to complete this change depends on the temperature—at 60° F. eight to ten days are required; if the cork of the bottle is secured and the mixture exposed in a water bath to a temperature of from 90° to 100° F. the change will be effected in eight or ten hours. The change takes place as quickly in diffused light as in direct sunshine, provided the temperatures are equal. The solution exposed to sunshine becomes somewhat turbid and deposits a muddy precipitate.

The change is due entirely to the carbolic acid, glycerin alone, under similar conditions, effecting no change in the iodine solution, while carbolic acid acts equally well with or without the presence of glycerin.

The *character* of the change is probably the transformation of the iodine into iodide of formyle (iodoform) at the expense of the carbon atoms of the carbolic acid.

The solution possesses antiseptic and stimulant properties in a marked degree, and has met with favor as an application in the form of injections, gargles and lotions "in cases of sore throat, ozœna, abcesses in the ear, and foul or indolent ulcers."

It has also been recommended as an *injection* in cases of internal hæmorrhoides, and by inhalation for throat and bronchial affections. When used for inhalation the glycerin can be omitted.

Philadelphia, June, 1858.

GLEANINGS FROM THE FRENCH JOURNALS.

By the Editor.

Strong Liquid Glue.—M. Knaff (*Jour. de Pharm.*, Mai, 1868) gives the following recipe for a liquid glue: Take 3 parts of good glue reduced to little fragments, cover it with 8 parts of water, and allow it to remain during some hours; then add half a part of chlorohydric acid and three-fourths of a part of sulphate of zinc, and expose the whole during ten or twelve hours to a temperature of 178° to 189° F. A mixture is thus obtained which does not gelatinize, which keeps well, and is very convenient for pasting.

Santonin Lozenges.—M. Guyot Dannecy (*Jour. de Pharm.*, Mai, 1868) has observed that when these lozenges are prepared with the santonin in crystals, unpowdered, they are nearly tasteless. In avoiding all trituration in the process of mixing the ingredients, the patient takes them without repugnance; but when, on the contrary, the santonin is powdered in a glass or porcelain mortar, the lozenges are very bitter and disagreeable.

Perfumes.—M. Stanislaus Martin, in a letter to the Societé de Pharmacie (*Proces-Verbal*, Avril 1er, 1868), remarks on the use of perfumes in ancient and modern times as follows:

Perfumes played a grand part among the ancients. They were esteemed among the Greeks; in the East they were employed in all their sacrifices; and among the Gauls the Druids perfumed their altars with the labiateous plants, resinous woods and juniper berries.

In our day the East is one of the regions richest in odorous resins, and where an immense consumption of perfumes is made in China, Cochin China and Japan.

At Jeddo, in the numerous palaces of the Emperor, during the time of prayer they burn a wood which exhales a delicious perfume, but the name of the tree is unknown, because it has so many synonyms. The essential oil of this wood, of which I have the honor to present a specimen to the Society, has a sweet, tenacious odor, is rapidly diffused, and is excessively dear. M. Chardin Hadancourt, well known for his skilful knowledge of perfumes, has been unable to assign it a place among those already known.

So far, botanists have found but two vegetables which furnish camphor in quantity sufficient for its extraction,—the *Camphora officinarum*, and the *Dryabalanops camphora*, which grows in Sumatra.

The Chinese gather it on another plant, where it collects under the form of little clots at the bases of the leaves and at the bottom of the corolla.

The odor of this camphor differs but little from that of ordinary camphor, nevertheless it possesses some peculiarity when rubbed between the fingers.

This camphor is so scarce that its price equals nearly that of gold. The Emperor and the mandarins only enjoy the luxury of its use on their persons. If it could be imitated it would be a source of wealth.

Manufacture of tartaric acid from the marc of grapes.—The only source heretofore utilized for obtaining tartaric acid is the lées of wine casks. Messrs. Inette & Ponteves propose to employ the marc of the grape, and by the following process to remove the acid from the tartrate of lime it contains:

The pressed marc is submitted to an ebullition of some hours with about two per cent. of sulphuric acid, with the intention of liberating the tartaric acid; a portion of cellulose is transformed into glucose, and as the marc contains nearly always some sugar which has escaped fermentation, the liquid may be fermented, and alcohol obtained from it by distillation. The residue is saturated with lime, which produces the tartrate of lime, from which the tartaric acid is separated by known processes. The quantity of marc yielded by a million hectolitres of wine can, according to the authors, produce 200,000 kilogrammes (437,000 lbs.) of tartaric acid; the marcs of the south of Europe contain 3 to 4 per cent. of tartrate of lime.

It sometimes happens that the presence of magnesia or pectinous matters interfere with the decomposition of tartrate of lime by the sulphuric acid. It is then preferable to treat the marc with an alkaline carbonate, in the manner to produce carbonate of lime and an alkaline tartrate. To effect this double decomposition the marc is suspended in four or five times its weight of water, and a quantity of carbonate of soda added, so that after three hours' ebullition the liquor shall be neutral; then by decanting the liquor, on standing it soon crystallizes.—*Rèpert. de Pharmacie*, Mai, 1868.

Compound syrup of coffee.—M. N. Severin, pharmacien of Brussels, to gratify a wish that he would give the formula for his *anti-rheumatic and gout syrup of green coffee and ash leaves*, has published the following in *Bull. Soc. Pharm. Bruxelles:*

Take of Mocha coffee (in its raw state) 40 troyounces.
Ash tree leaves (*Fraxinus excelsior*), 154 grains.
Distilled water, q. s. (about 10½ pints.)
White sugar, 26½ troyounces.
Phenic acid, liquid, 5 drops.

Pulverize the coffee, introduce it into a percolator of such size as to but half fill it, distilled water at 140° F., and maintain it at this temperature during 12 hours, and pour the liquor which passes on the sugar. Continue the percolation with distilled water at the same temperature, till the coffee is exhausted. Mix the last percolates, add the ash leaves, and evaporate until the liquid is so far reduced as to make with the first dense liquid and sugar a pint of syrup, which is to be filtered, and, after cooling, the phenic acid added.

Anilin inks.—The several anilin colors may be used as the bases of inks, according to M. Fuchs. To prepare red, blue, green, or yellow ink, use the corresponding anilin colors of commerce, in the solid state. Take 15 parts, for example, in a well enamelled vessel, and add 150 parts of strong alcohol; allow them to stand three hours, then add 1000 parts of rain or distilled water, heat the whole gently during several hours, until the odor of alcohol is dissipated, add then about 60 parts of gum arabic dissolved in 250 parts of water, and strain. As the anilin colors of commerce vary a great deal in quality, the amount of dilution must vary with the sample used, and the shade determined by trial.—*Repert. de Pharm.*, Mai, 1868.

Sulphates in filtering paper.—M. Kruger has stated that many filtering papers of commerce contain considerable quantities of sulphates, and that it is sufficient to repass the same distilled water several times to render that liquid capable of forming a sensible precipitate with nitrate of baryta.

M. Kruger thinks that the acid enters the paper from the water used in its manufacture as sulphate of lime, because it is not probable that it would be admixed mechanically and intentionally, as is done under the name of *annalin* in some kinds of paper. This sulphate of lime is not derived from the chloride of lime and sulphate of soda employed in bleaching, because no soda salt is found in these papers. Whatever be its source, it is important to guard against its presence.—*Journ. de Pharm.*, Avril, 1868.

Bleaching of palm oil.—M. Englehart bleaches palm oil thus: Take 1000 lbs. of palm oil, heat it to 144° F. in a boiler, and let it stand over night, and next day decant it into a clean vessel and cool to 98° to 104° F. In another vessel boil 45 pounds of water, dissolve in it 15 pounds of bichromate of potassa, and when partly cooled add 60 pounds of hydrochloric acid. This solution is then mixed with the palm oil, and agitated rapidly. In five minutes the color of the mixture becomes green, owing to the reduction of the chromic acid at the expense of the coloring matter of the oil. On continuing the stirring the oxide of chrome separates, and it is sufficient to wash the oil with water to get it perfectly white.—*Jour. de Pharm.*, Avril, 1868.

Trimethylamine in wine.—M. E. Ludwig states that the organic basic substance noticed in wine by M. Brucke he has proven to be trimethylamine, which he thinks is due to the decomposition of the ferment,—a source of this base pointed out by M. Muller. The author found this base in other qualities of wine, and inclines to consider it as a principle entering fermented liquors. M. Nickles says it has been suggested that it may exist in the grape, and arise from the animal manures used in its culture.—*Jour. Prakt. Chemie*, and *Jour. de Pharm.*

Solubility of plaster of Paris in solution of sugar has been shown by M. Sostmann, and that hot concentrated syrups dissolve more than weak ones, but prolonged boiling causes a partial separation of the sulphate of lime in the scum.

On glucose in gentian root, by M. Louis Magnes.—The author has examined gentian root carefully by the cupropotassic liquid process of Barreswill, and finds that commercial gentian contains, when perfectly dried at 212° F., 15 per cent. of glucose, and it before drying retained 17 per cent. of water; so that originally, as taken in commerce, it contained 12 per cent. of glucose.

The author also examined extract of gentian.

Adulterated subnitrate of bismuth.—M. Roussin, in a communication to the Society of Pharmacy of Paris, states that he had found 28 per cent. of phosphate of lime in subnitrate of bismuth. The author tests the subnitrate by dissolving 15 grains in a little nitric, or, better, muriatic acid, and adding tartaric acid. If now an excess of solution of caustic potassa be added, no precipitate will follow if the salt is pure, but if phosphate of lime is present it is precipitated.—*Jour. de Pharm.*

Agave a rubefacient.—The pulp of the leaves constituting the bulk of agave is said to act like mustard, and has been used in veterinary medicine.—*Rep. de Pharm.*

New reagent for nitric acid.—M. Braun suggests the use of sulphate of anilin as a test for the presence of nitric acid. In a watch crystal he puts about a seventh of a grain of sulphuric acid, sp. gr. 1·842, and drop by drop about a fourteenth of a grain of sulphate of anilin, prepared with 10 drops of anilin of commerce, 8 grains of sulphuric acid, and 48 grains of water. Dip a glass rod in the liquid supposed to contain nitric acid, and draw it in the anilin solution; then blow on the surface, when quickly fringes of red, deepening in color with the proportion of nitric acid present, will be seen.

By the aid of this process M. Braun has easily recognized the presence of nitric acid in sulphuric acid, and in drinking waters. —*Jour. de Chimie Méd.*, Avril, 1868.

MEANS OF RENDERING ANIMAL FAT INODOROUS AND WHOLESOME.

According to Prof. Hirzel, animal fats may be preserved in a good condition during a year without their contracting a bad odor, by mixing the recently melted fat, for example, 7 kilogrammes (14½ lbs.), with 20 grams. (5 drachms) of table salt and 15 grains of alum in powder, and heating till a scum is formed on the surface, composed of coagulated albumen, membranes,

&c. The scum is separated, and the fat becomes clear and transparent. When it is cooled it is washed by malaxation many times with water, till the salt is removed. It is then held in a state of fusion, at a temperature sufficient to evaporate all the water, without injuring the fat.—*Bulletin de la Société de Pharm. de Bruxelles.*

ANILIN BLACK USED AS INDELIBLE INK FOR LINEN.

By Dr. Jacobsen.

This ink should be kept in the form of the two following solutions:

I. *Solution of Copper.* Take 8·52 gms. crystallized chloride of copper, 10·65 gms. chlorate of soda, 5·35 chloride of ammonium, and dissolve these in 60 gms. of distilled water.

II. *Solution of Anilin.* Dissolve 20 gms. chlorohydrate of anilin in 30 gms. of distilled water, and add to it 20 gms. of a solution of gum arabic (1 gum to 2 of water) and 10 gms. of glycerin.

On mixing four parts of the anilin solution with one part of the copper solution, a greenish liquid is obtained, which can be used immediately to write on the linen, but it changes after several days. It is necessary, therefore, to keep the solutions separate until wanted. The characters may be traced with a pen, brush or pencil; if the liquid does not flow well in the pen it may be diluted sufficiently without fear of diminishing the intensity of the color, which appears first pale green, and becomes gradually black by exposure to the air. The writing may be rendered black instantly by passing over it a hot iron, or heating moderately the under side over a spirit lamp. It is even better to expose it to a current of steam, which is sufficient to develope instantly the anilin black. After this treatment the tissue is washed with warm soapsuds, when the characters will present a beautiful blue black hue. This ink resists acids and alkalies, and if the ink has penetrated the linen so as to render the characters visible on the reverse, there is no fear that the color will be altered by lye.—*Jour. de Chim. Méd.*, June, 1868.

ON ROSANILIN AS A REAGENT FOR FREE FATTY ACIDS, AND FOR COD-LIVER OIL.

By Dr. F. Jacobsen.

The author finds that rosanilin is insoluble in neutral fatty oils, but is at once colored pale red, more or less deep, if the oil is rancid, or has any free oily acid present, and if very rancid, as deep as gooseberry juice. The fuchsin of commerce (muriate, arseniate, &c., of rosanilin) dissolves in neither neutral or rancid oils, or fat acids. Oleic acid and all the fatty acids dissolve rosanilin immediately in great quantity, and are deeply colored. The oleate of rosanilin dissolves in all proportions in the oils and neutral fats. The rosanilin, for this reason, can be employed to detect free acid in mixtures of oils.

The author proposes this reagent as a means of detecting the so-called bleached cod-liver oil sold in the European markets, which is not cod-liver oil, but the oily fats of different marine mammals, or those oils prepared by shaking with potash lye, and allowed to stand till clarified. As the medical properties of cod-liver oil should be partly attributed to the free fat acids that it contains, the white oil thus prepared possesses properties analogous to the neutral fish oils, and, unless rancid, are not colored by anilin.

In some lubricating oils oleic acid residues have been used as an adulteration, which this test will easily discover.

When an oil contains but very little free acid, the test should be applied as a saturated solution of rosanilin in absolute alcohol,—a few drops added to the oil, and heated in a water-bath with stirring until the alcohol is evaporated. If no free fatty acid is present no coloration is produced, and the test separates, and is deposited at the bottom of the vessel, or remains in suspension as a brownish powder.

Specimens of Provence oil and oil of sweet almonds did not color; oil of poppy seed slightly red; linseed oil deeply red, modified by the yellow color of the oil; castor oil colors yet more decidedly. Olive oil, mixed with five per cent. of oleic acid, is tinted like gooseberry juice.—*Jour. de Chim. Méd.*, from *Neues Jahr. für Pharm.*

ON HYDRARGYRI IODIDUM VIRIDE, B. P.

By C. H. Wood, F.C.S,

The "Green Iodide of Mercury" of the British Pharmacopœia is clearly intended to be identical with the "Iodide of Mercury" of the London Pharmacopœia. This is expressly implied by the "Synonym Hydrargyri Iodidum *Lond.*" given in the description of the preparation in the last edition of the British Pharmacopœia. In both works the chemical compound mercurous iodide is obviously meant, and the British Pharmacopæia defines this by giving the formulæ "Hg_2I or **HgI**." But the London Pharmacopœia, in describing this compound, states, that "when freshly prepared it is *dingy yellow*;" while the British Pharmacopœia names it "Green Iodide," and describes it as "*a dull green* powder." This discrepancy occurring in the description of a definite chemical body is a little remarkable, and requires some explanation. The processes and the proportions of ingredients given in the two Pharmacopœias are almost identical; yet according to one authority we obtain a yellow, and according to the other a green product.

I have frequently made the iodide of mercury according to the London Pharmacopœia, and have always found that it possessed a dull yellow color, certainly with a shade of green upon it, but nevertheless the yellow vastly preponderating. Yet chemical authorities generally indicate that mercurous iodide is a green substance. In Gmelin's 'Chemistry' mercurous iodide is variously described as "a green," "a dark green," and "a yellowish-green;" but no mention is made of its being yellow. The British Pharmacopœias of 1864 and 1867 are therefore in accord with the leading chemical manual.

Being desirous of understanding this matter more perfectly, I made a few experiments to elucidate the point. Upon repeating the process as given in the British Pharmacopœia, I found that the first effect of triturating the mercury and iodine with the spirit was to obtain a red color; due, no doubt, firstly to the solution of the iodine, and secondly to the formation of the red iodide of mercury; but after continuing the trituration for some time the mass became a decided dark green. This then was the point at which I was to transfer the product to filtering-paper and dry it by exposure in a dark room. But instead of doing this I continued the trituration until the mass was dry. As the rubbing proceeded I found the green color rapidly disappeared, the powder became more and more yellow, and the ultimate result was a yellow substance with a dingy greenish tint upon it. The question that arose, therefore, was to ascertain the composition of the product at the two periods; namely, at the period in which it was decidedly green, and at the subsequent period when it became permanently yellow. To solve this point 200 grains of mercury and 127 grains of iodine were triturated with a little spirit until the dark green color was obtained. A portion of this iodide was then taken for immediate analysis, and the remainder put in a dark place to dry. The analysis was effected as follows:—

A known quantity of the iodide was washed with boiling absolute alcohol, the washings evaporated to dryness, and the residue weighed; it consisted of red or mercuric iodide. The insoluble portion was dried and divided into two parts; one was dissolved in hydrochloric acid and chlorate of potash, the solution evaporated to near dryness, diluted, precipitated with stannous chloride, and the precipitated metallic mercury collected and weighed; the other half of the powder was digested with finely granulated zinc and diluted acetic acid, whereby an amalgam of zinc was formed, the iodine passing into solution as hydriodic acid. After some time the liquid was poured off, nitrate of silver added to it, and the precipitated iodide of silver collected and weighed. Other methods of analysis were also employed, but the above were found sufficiently satisfactory. As some objections might be taken to the use of boiling alcohol, the red iodide was also estimated by washing with ether.

The result of the analysis of the green powder was as follows, the moisture being excluded:—

Mercuric Iodide, **HgI_2** . . .	28·6
Mercurous Iodide, **HgI** . . .	58·4
Metallic Mercury, **Hg** . . .	13·0
	100·0

It thus became evident that the green product was far from what it should be, according to the formula given by the Pharmacopœia.

I then prepared some of the iodide, continuing the trituration until the green color had passed to the dingy yellow, which, according to the London Pharmacopœia is characteristic of the product. A portion of this compound was then analysed, and the following results obtained:—

Mercuric Iodide, ...	5·0
Mercurous Iodide, ...	92·8
Metallic Mercury, ...	2·2
	100·0

On comparing these numbers with those preceding it will be seen that by continuing the trituration the red iodide had to a great extent disappeared, and so had the free mercury. No doubt these two substances had entered into combination and formed a further portion of the mercurous iodide. The results so far, then, seem to admit of an easy explanation. By the constant trituration the last portions of the metallic mercury reach a state of extremely fine divisions. In this state the metal possesses somewhat of a blue color (well known to us in blue pill, etc.,) which, mixed with the yellow of the mercurous iodide already formed, would produce a green. According to this view, therefore, the green of the iodide is due to a mechanical mixture of mercurous iodide and mercury. It equally follows from this that the true color of pure mercurous iodide must be yellow. This explanation derives additional support from the fact that the green powder cannot be obtained and kept of any uniform tint. As first got it is a decided grass-green, but even while it is drying, however carefully the light be excluded, the color changes, approaching more and more to yellow. At the same time that this change goes on the proportion of mercuric iodide diminishes, and consequently the proportion of metallic mercury must diminish also, thereby lessening the green and augmenting the yellow color.

In Gmelin's 'Handbook' three iodides of mercury are described; namely, the mercurous iodide, the mercuroso-mercuric iodide, and the mercuric iodide. The first, as I have already mentioned, is stated to be green, dark green, or yellowish-green; the second yellow, and the third red. Three processes are given for the production of mercurous iodide. The first is by direct combination of mercury and iodine. It is the method of the Pharmacopœia which I have examined with the result stated. The second is to decompose calomel with iodide of potassium. In the third process mercurous acetate is substituted for calomel. The second of these methods is stated to yield "pure green" mercurous iodide. As I had entirely failed to obtain such a body by direct combination, I made several careful experiments with this process of double decomposition. 235·5 grs.* of calomel were triturated with 166 grs.* of iodide of potassium previously dissolved in a little water. The mixture was allowed to remain for twenty-four hours and then filtered, the precipitate washed and dried. The product was of a fine dark green color, and entirely different from any iodide I had previously obtained. Upon testing it, however, I found it to contain a large quantity of undecomposed calomel. Its weight was also much less than theory would indicate. By analysis the following numbers were obtained:—

Calomel, ...	41·7
Mercurous Iodide, ...	35·3
Mercury, , ...	23·0
	100·0

Gmelin states that the ingredients must be used in exactly equivalent portions, as any excess of iodide of potassium would separate metallic mercury. This would probably occur in accordance with the equation:—

$$2HgI+KI=\underbrace{HgKI_3}_{\text{Soluble salt.}}+Hg.$$

But although I repeated the experiment several times, weighing the ingredients accurately, and digesting them together for different periods, in no case could I obtain anything like complete decomposition. The first portion of mercurous iodide formed was apparently decomposed by the remainder of the iodide of potassium in preference to the residual calomel.

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*Equivalent quantities.

The results of these experiments were consequently confirmatory of those previously obtained, and contributed to show that the green color was really due to a mixture of mercurous iodide and metallic mercury.

I then resorted to the last process given by Gmelin, namely, the reaction of iodide of potassium on mercurous acetate. Equivalent quantities of crystallized mercurous acetate and iodides of potassium were triturated with water. The first effect was the production of a nearly black precipitate, which gradually became green, and, after digesting a day or two, passed to a light yellowish green. The appearance of this precipitate was again different to that of either of the other iodides I had prepared. Upon testing it, I found it to contain a considerable quantity of undecomposed mercurous acetate; consequently free metallic mercury was present in it.

The imperfect decomposition of the calomel and mercurous acetate I thought possibly arose from employing them in the undissolved condition. Of course calomel could not be dissolved, but mercurous acetate is, to a certain extent, soluble. We cannot employ hot water for the purpose without decomposing a portion of the acetate, and converting it into a mercuric salt. I therefore prepared a cold aqueous solution of the mercurous acetate, and tried the effect of mixing it with a very dilute solution of iodide of potassium. Taking care to keep the acetate in slight excess, I succeeded in obtaining a pure yellow precipitate, but, owing to the very slight solubility of mercurous acetate, the quantity of precipitate I obtained was so small that I did not submit it to analysis, and am therefore unable to say whether it was pure mercurous iodide or the mercuroso-mercuric iodide of Gmelin.

This latter compound I have not yet studied in comparison with the yellow mercurous iodide, but I am making a few experiments for that purpose.

It results, then, from what I have stated, that by none of the processes indicated could I succeed in obtaining pure mercurous iodide, possessed of a green color; that by any of the reactions I could obtain a green product, but that then it always contained free metallic mercury. Moreover, that these green products were never alike in color, but varied from a dull dark green to light yellowish-green.

It also results that to obtain pure mercurous iodide by the process given in the Pharmacopœia, the trituration should be continued until the green mass which forms becomes dry, and assumes a dull yellow color. So obtained, the product is permanent. It still contains small quantities of mercuric iodide and free mercury; the former may, and perhaps ought, to be removed by washing with alcohol or ether.

Lastly, it results that the London Pharmacopœia gives the most accurate description of this compound, although the British Pharmacopœia are best in accord with chemical manuals.—*Lond. Pharm. Journ.*, *May*, 1868.

NOTE ON SYRUP OF HYPOPHOSPHITE OF IRON.

By C. H. Wood, F. C. S.

Since the introduction of the hypophosphites into medicine by Dr. Churchill a few years back, this syrup has been frequently prescribed; and although at the present time it is much less used than the syrup of the phosphate of iron, nevertheless the pharmaceutist is every now and then called upon to supply it. The only process for its production yet published in this country, that I am aware of, occurs among the Notices to Correspondents in the Pharmaceutical Journal, vol. vii. new series, p. 440. We are there directed to dissolve moist and recently-precipitated carbonate of iron in a mixture of hypophosphorous and phosphoric acids, and convert the resulting solution into a syrup. No mention is made of the strength of the hypophosphorous acid, or how the acid is to be obtained.

A very similar method is given in the work on "Practical Pharmacy," by Mr. Parrish. Carbonate of iron is to be precipitated from a given weight of sulphate, and dissolved in a stated quantity of hypophosphorous acid, of sp. gr. 1·036; then sugar added as usual. It will be seen that for both these processes it is necessary, as a starting point, to have a solution of hypophosphorous acid of some defined and uniform strength. In Parrish's book a formula is given for the production of this acid. It is as follows:—

Take of hypophosphite of lime, 480 grs.; crystallized oxalic acid, 350 grs. or q. s.; water, 9 fl. oz. Dissolve the hypophosphite in 6 oz. of the water, and the acid in the remainder with the aid of heat; mix the solutions, pour the mixture on a white paper filter, and when the liquid has passed, add distilled water carefully, till it measures 10 fl. oz., and evaporates this to 8½ fl. oz. The solution thus prepared is stated to contain about 10 per cent. of real acid ($\mathbf{HPH_2O_2}$).

Having frequent occasion to prepare this hypophosphite of iron, I at first resorted to the process given by Mr. Parrish, and made a quantity of the hypophosphorous acid by his method as just described. But upon carefully testing the acid I obtained, I found it was not so pure as theory would indicate it should be; in fact, it contained an appreciable quantity both of oxalic acid and of lime. The free hypophosphorous acid had dissolved a portion of the oxalate of lime. This impurity seemed to me to be of some importance, and, as it could not be got rid of, it constituted an objection to the process. It was easy to produce a purer acid by resorting to hypophosphite of baryta, and exactly decomposing its solution with sulphuric acid. But as the syrup of hypophosphite of iron is only occasionally demanded, and as, from its proneness to oxidation, it deteriorates greatly by long keeping, it appeared desirable to possess a more expeditious method for its preparation than that which involves the elimination of the acid, and precipitation of the iron as carbonate. I consequently abandoned the use of the acid, and resorted to a process of double decomposition.

When hypophosphite of lime and sulphate of iron are brought into contact, sulphate of lime is precipitated, and ferrous hypophosphite remains in solution.

$$\mathbf{Ca(PH_2O_2)_2+FeSO_4=Fe(PH_2O_2)_2+CaSO_4.}$$

Using these materials in their atomic proportions, the iron salt is obtained contaminated only by a small quantity of sulphate of lime, and the amount of the latter may be reduced to a minimum by employing very little water as a solvent.

It became necessary, however, for the trustworthiness of this method, to ascertain whether commercial hypophosphite of lime is sufficently pure and definite to effect always an exact decomposition of the sulphate of iron. I therefore analyzed several samples of the salts, and found that the amount of real hypophosphite ($\mathbf{Ca(PH_2O_2)_2}$) varied from 92 to 94 per cent., the remainder consisting chiefly of water, with a little carbonate and phosphate of lime.

This variation in composition I regard as too slight to be of any material importance. In calculating the quantity of salts necessary for the reaction, the lime salt may be regarded as containing 90 per cent. of real calcic hypophosphite, a slight excess of the latter being preferrable to any surplus of the sulphate of iron. The proportions to be then employed for 320 grs. of ferrous hypophosphite, $\mathbf{Fe(PH_2O_2)_2}$ are 480 grs. of crystallized sulphate of iron and 326 grs. of commercial hypophosphite of lime. If the two salts are triturated with $2\frac{1}{2}$ oz. of water, the resulting paste pressed out, and the filtered liquid mixed with seven times its volume of simple syrup, the product contains 2 grs. of hypophosphite of iron in each fluid drachm.

But the syrup so produced does not keep long unless atmospheric air is thoroughly excluded. After a few hours' exposure, a precipitate begins to form at the surface, and gradually passes downwards. To prevent this, it is necessary to introduce a free acid, and phosphoric or citric acid is best suited for the purpose. The former is preferrable, because it is more in chemical accordance with the other constituents of the syrup. I have tried the use of free hypophosphorous acid, but it does not answer well, being a very bad solvent for the insoluble ferric hypophosphite which forms after a time in the syrup. The process I follow, therefore, stands as follows:—

Granulated Sulphate of Iron	480 grs.
Hypophosphite of Lime	326 grs.
Dilute Phosphoric Acid	1 fl. oz.
Water	$1\frac{1}{2}$ oz.
Syrup	q. s.

Dissolve, without heat, the sulphate of iron in the phosphoric acid, previously mixed with water. Rub the hypophosphite to fine powder, and pour on it the solution of the sulphate of iron. Triturate together for two or three minutes, then pour the mixture on to a piece of damped calico, and squeeze out the liquid as far as possible with the hands. Filter the solution so obtained into a measure-glass, and add to it seven times its volume of strong syrup. The resulting syrup contains 2 grs. of hypophosphite of iron, $\mathbf{Fe(PH_2O_2)_2}$ in each fluid-drachm. The time occupied in its preparation need not exceed a quarter of an hour. As hypophosphite of lime is now in general use, the materials are always at hand, and the syrup may therefore be prepared at the time it is wanted, its goodness and uniformity being thereby ensured. It is true that the syrup so obtained is contaminated with minute quantities of lime and sulphuric acid. But it must be borne in mind that the amount of sulphate of lime held in solution by 2½ oz. of liquid is so small that its proportion in the syrup must be very minute.

It is very probable that this process for preparing the syrup has been resorted to by other operators, but as no description of it has been published, it seemed desirable to give it insertion in the Pharmaceutical Journal. It is obvious that the same method is applicable to the production of the syrup of hypophosphite of iron and quinine,—sulphate of quinine being decomposed by hypophosphite of lime in the presence of a free acid.—*Lond. Pharm. Journ., April*, 1868.

NITROGLUCOSE.

By M. Carey Lea.

As nitroglucose has been much less studied than its congeneric nitro-substitution compounds pyroxyline, xylodine and nitroglycerine, a few words on its preparation and properties may not be uninteresting.

The substitution does not take place in sugar with quite the same facility as cellulose; the acids need to be stronger and the temperature lower. The sugar, moreover, appears at first to dissolve, and then to separate out again, in the form of a greyish paste, which when thrown into water and freed from the adhering acid, becomes nearly white.

An attempt to prepare nitroglucose by the use of nitre and sulphuric acid, which succeeds so well and so easily in the case of cellulose, failed almost wholly with sugar. Not more than two or three per cent. of the weight of the sugar was obtained.

With sulphuric and strong nitric acids, allowed to cool thoroughly after mixing, the reaction takes place easily, and a considerable quantity of nitroglucose is obtained. The nitric acid should be as strong as possible, and as the acid of the requisite strength is not easily obtained commercially, I have found an advantage in using in part the fuming sulphuric acid. Two fluidounces of fuming sulphuric acid, two of common sulphuric, two of strong nitric acid, as near to 1·5 sp. gr. as can be obtained, give good results. The sugar is stirred in, in the form of powder, to a thin paste. The stirring is kept up, and as fast as the nitroglucose separates in doughy masses, it is removed with a spatula and thrown into cold water. A further addition of sugar will give more nitroglucose, but considerably less in proportion than the first edition. As soon as possible, the nitroglucose is to be kneaded up with cold water, to get the acid out. In one case when this was neglected, for ten or fifteen minutes, the nitroglucose passed to a greenish color and apparently was undergoing a commencing decomposition.

The removal of the adhering acid is much more difficult than in the case of pyroxylin, and is an extremely disagreeable operation. The acid pervades the whole of the doughy mass so fully that the fingers are stained and burned by it, nor can the whole of the acid be removed satisfactorily in this way. The best means I found was to dissolve the crude nitroglucose in a mixture of alcohol and ether and then to pour this into a large quantity of cold water with constant stirring, and violent agitation afterward. The method is not altogether satisfactory, and seems to be attended with some loss of material, though why, it is not easy to see.

Prepared in this way, nitroglucose is a white lustrous body, which may either assume the doughy amorphous condition or the crystalline, and passes from one to the other with extreme ease. When first formed by the mixed acids, it always has the doughy form. That which I obtained by the use of nitric and sulphuric acid, was crystalline from the first. When precipitated by water from its solution in alcohol and ether, it is doughy and almost liquid, and remains so for a long time, if there is any considerable quantity of it.

The best mode of preserving it appears to be under water. By standing thus it gradually hardens, and passes sometimes to a somewhat hard amorphous mass, and sometimes to a granular crystalline state. It appears to be wholly insoluble in water. A few minute grains of the crystalline form diffused through 15 or 20 ounces of water, did not dissolve after many hours standing. In a mixture of alcohol and ether it dissolves as easily as sugar in water, and in such quantity as to make the liquid syrupy.

Its detonating properties are but slight. If it be well dried and a match applied, it deflagrates with a feeble flash.

It has been stated by Dr V. Monckhover, that when dissolved in alcohol and kept sometime in a warm place, it undergoes decomposition, as evidenced by the fact that the solution then gives an abundant precipitate with nitrate of silver, which at first it did not do. An experiment made in this direction did not give the result thus indicated. A solution of nitroglucose in alcohol, containing about 40 grains to the ounce, was placed in a stoppered vial and was kept in the sand bath at a temperature of about blood heat for nearly a month. But neither it nor a fresh solution gave a precipitate with alcoholic solution of nitrate of silver. It would seem from this that certain conditions of temperature or otherwise are necessary, in order that this decomposition should take place.—*Am. Journ. of Science and Arts, May*, 1868.

CHALK-EATING.

By W. W. Ely.

Mr. Editor.—A gentleman who has been an occasional patient of mine for twenty-five years past, began the use of chalk in 1842. I have made notes of the case, when I have had occasion to see him, since April, 1844. For some time previous to using the chalk he was pale and sallow, and was affected with diarrhœa, which followed an attack of fever. His weight was then 135 pounds. During the first year he took fifty pounds of prepared chalk, regained his health, and reached a weight of 180 pounds, The chalk was then omitted for a year or more, as his desire for it ceased. The year previous to May, 1846, he used about three-fourths of a pound per week. In November, 1850, he reported a constant use of one pound per week, except for a short time when he was unable to procure it. His health continued good, and his weight was undiminished. Its use was then suspended for a year previous to July, 1852. From this date to the present time—February 1868—a period of fifteen years and a half, he has continued to take it at the full rate, one pound per week. The total amount used, as nearly as it can be estimated, is 1050 pounds—half a ton of chalk in about twenty-five years! The chalk has been taken simply to satisfy a craving for it, and to relieve gastric irritation, which yields immediately to its ingestion. During the first half of the period, his health was not sensibly impaired by the use of chalk; latterly, however, he has been an invalid, and has led an inactive life; but how much of his debility and suffering have been due to the habit in question is not easy to determine. His bowels have been generally regular. His appetite and digestion are somewhat impaired, and his appearance is decidedly valetudinary. His age is 67 years, and his present weight is 145 pounds, being less than for two years past.

In January, 1867, I noticed a general discoloration or "bronzing" of the skin. His urine, being examined at the time, was of natural color, slightly alkaline, and free from albumen. The dark color of the skin is now somewhat intensified, resembling a mulatto. There is some irregularity in the action of the heart, with a strong mitral regurgitant murmur. He uses tobacco, and stimulants in moderation, and for three years past has taken morphine not exceeding one grain daily. From the time of my first acquaintance with this patient to his commencing the use of chalk, he was subject to functional derangements of the stomach, which, during the next ten years, were relieved by the comparatively moderate use of his favorite article. During the later years, it is not improbable that the chalk has operated injuriously as an indigestible substance. I have reported the case, with its principal features, as a sort of medical anomaly, rather than with the belief that it possesses any practical importance.

Rochester, N. Y., Feb., 1868.

—*Bost. Med. and Surg. Journ., March*, 1868.

RHIGOLENE AS A LOCAL ANÆSTHETIC.

By John D. Jackson, M.D., of Danville, Ky.

A brief record of a few observations I have made upon rhigolene, may perhaps not be deemed amiss as supplemental to the paper on Local Anæsthesia, by Dr. Weist, which appeared in the January number of the *Western Journal.*

The statement that direct sunlight has produced an explosion of rhigolene, has, I know, deterred a large number of the profession from using what from the statement would be supposed to be a dangerous article—especially while ether, which is not deemed to have such a property, can be found to fill its place.

To test this, in September last I exposed on a metallic roof, to the full rays of the sun, the thermometer at 120 F., a phial containing an ounce of rhigolene, of the brand of Theo. Metcalfe & Co., Boston. Within a minute, the cork was blown four or five feet into the air, and rhigolene underwent violent ebullition, which, however, subsided within a few seconds. The cork was replaced, and pressed in more tightly, when some minutes elapsed before it was again expelled, and with more violence than before. This was repeated many times, the exposure to the direct rays of the sun being continued for a quarter of an hour.

To further test its explosive properties, I filled two drachm phials, such as are found in ordinary medicine pocket cases—one with rhigolene of the brand above mentioned, and the other with Squibbs' Æther Fortior, and applied a lighted match to each. The ether burned, yielding the customary bluish flame, and went out at the end of 32 minutes, a little more than a fourth of the contents of the phial having been consumed. The rhigolene burned with a more brilliant light, yielding a yellowish blue flame, which expired at the end of 63 minutes, exhausting nearly half the contents of the phial.

These experiments were several times repeated, and always with the same results. In our experiments the rhigolene phial, while aflame, was accidentally upset, and the contents poured out upon the table, burning with a beautiful flame, and was rapidly consumed, leaving the table (walnut) nearly unscorched.

These observations show, I think, that the rhigolene is certainly not explosive in the sense that gunpowder and nitro-glycerine are, and that while more volatile and inflammable than ether, that the dangers to be apprehended while using it, are precisely those attending the use of the latter.

A bottle stoppered tightly with glass, exposed in a room at a temperature above 70 F., may have the stopper to dance, from the volatilization of some of the rhigolene, and so in the use of the Richardson's instrument, the cork is sometimes blown out for the same reason. The hand directly in contact with a bottle containing ether or rhigolene, produced a temperature sufficient to volatilize either—the ether (+ 96° F.,) or rhigolene (+ 70° F.) For preventing this, we know of no better method than that adopted by Dr. Krackowizer—the enclosing of the bottle within a double-walled wire gauze box, the space between the inner wall and bottle being filled with wet sponge, the evaporation from which always keeps the contents of the bottle below boiling point.

Dr. Bigelow has depressed the mercury with rhigolene to —19° and Page to —16°, while Dr. Krackowizer could never get a lower temperature than —8°. Our experience more readly corresponds with the last experimenters, being able, with Tiemann's modification of Richardson's apparatus, to depress the mercury to —10°.—*Western Journ. of Medicine, April*, 1868.

ON A FALSE CINCHONA BARK OF INDIA.

By J. Broughton, B.SC., F.C.S.,
Chemist to the Government Cinchona Plantations of the Madras Presidency.

Among the numerous indigenous febrifuges of South India, one of the most interesting is the bark of the *Hymenodictyon* *excelsum* (Wallich), or pundaroo. The considerable interest which attaches to this plant does not depend so much on its proved efficacy in medicine as upon its history and botanical relations. Belonging to the same Order as the true Cinchonas, it so greatly resembles them in appearance that for many years it was known by the name of *Cinchona excelsa*, a name which was, I believe, first bestowed upon it by Pennant. Being thus considered the only cinchona indigenous to India, great expectations were entertained that it would be found at least a most valuable febrifuge, if not an actual source of quinine. This opinion was, to some extent, corroborated by the bitter taste of the bark, and by its being used as a febrifuge among the natives. Roxburgh* states that the inner coats of the bark possess both the bitterness and astringency of Peruvian bark and, when fresh, in a stronger degree. The bitter taste, however, on chewing, is not easily perceived, but is more lasting. Ainslie, speaking of the various substitutes that had been recommended for Peruvian bark, mentions the bark of *Cinchona excelsa* as having been ascertained to possess powerful tonic and antifebrile virtues.

O'Shaughnessy speaks of the bark as follows:†—"The two inner leaves of the bark possess great bitterness and astringency; the bark is used by tanners, and also as a medicine by the Hindoos in cases requiring astringents."

"We have analysed the bark of *Cinchona excelsa* from the Botanic Gardens of Calcutta, but could detect no alkaline ingredient; nevertheless the trees of hilly regions may furnish the valuable desideratum. The stamens being contained within the tube affords much ground for expecting this discovery of a febrifuge alkaline in this species."‡

The plant to whose bark the above mentioned virtues are ascribed is a fine timber tree. Its handsome foliage might easily be mistaken by an observer not acutely botanical for that of *Cinchona Peruviana*. Its bark is thick with a liber of loose texture, but abundant in large, woody cells, which are thickened and hardened by ligneous deposit, so that they produce an almost gritty sensation when placed between the teeth. The bark possesses the remarkable property of being very bitter when quite fresh, but this bitterness diminishes on keeping, so that after a few days it has so decreased that the bark becomes nearly tasteless.

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* Flora Indica, vol. ii. p. 149.

† Bengal Dispensatory, 1842, pp. 394, 395.

‡ Analyses of the bark of the *Hembra* varieties of the cinchona of the Government plantations have not hitherto corroborated the hypothesis alluded to by O'Shaughnessy.

The foregoing circumstances induced me to submit the bark to a careful chemical examination, in the hope that I might be fortunate enough to discover a proximate principle, whose constitution might, perhaps, throw some light on that of the true cinchona alkaloids.

By the kindness of Major Morgan, Deputy-Conservator of Forests, I obtained a supply of the fresh bark from the neighborhood of Mudumullay. From it I was finally successful in obtaining the bitter principle in a pure crystalline state. After many trials, I found the following simple process enabled me to obtain it in considerable quantities:—The sliced fresh bark is boiled with water till it becomes somewhat soft, when it is drained and squeezed through a cloth. The bitter decoction thus obtained is carefully evaporated to a small bulk over an open fire, when it is mixed with a sufficient quantity of calcined magnesia to render it of a creamy consistency, after which it is evaporated to dryness by a steam heat. The residue is then powdered, placed in a flask, and repeatedly exhausted with strong alcohol, and filtered. The alcoholic extract thus produced is magnificently fluorescent, surpassing in this respect a solution of sulphate of quinine. The alcohol is then nearly removed by distillation, and the liquid residue is set aside in a cool place for twelve hours, when the whole solidifies into a mass of fine white prismatic crystals, which can be obtained quite pure by two further crystllizations from water.

The crystals are somewhat sparingly soluble in cold water and alcohol, but readily dissolves in those liquids when boiling. The solutions are beautifully fluorescent, but they loose this property by the addition of a drop of hydrochloric acid. When boiled with the latter reagent, and the solution subsequently poured into a hot alkaline solution of cupric salt, a precipitate of red cuprous oxide was immediately produced. An aqueous solution of the crystals only precipitated the cupric solution on prolonged boiling. The substance therefrom appeared to be a conjugate compound of grape sugar.

The purified crystals were dried in vacuo over sulphuric acid for several days. They were then submitted to analysis, and then yielded the following numbers:—

I. 0·4793 grm. burnt with cupric oxide yielded 0·9147 grm. carbonic acid and 0·2209 grm. of water.

II. 0·4176 grm. yielded 0·7937 grm. carbonic acid and 0·1995 grm. water.

I found on comparison that the foregoing numbers closely correspond with those yielded by æsculin, the fluorescent and crystalline principle of horse-chestnut bark discovered by Fleischmann, and subsequently analysed by Tromsdorff in 1835.* This is clearly shown by the following comparison:—

Æsculin.			I.	II.
C_{21}	252	52·06	52·04	51·90
K_{24}	24	4·96	5·12	5·31
O_{13}	208	42·98	42·84	42·79
	414	100·00	100·00	100·00

Rochleder and Schwars† found that on boiling æsculin with hydrochloric acid it split up into æsculetin and grape sugar.

$$C_{21}H_{24}O_{13}+3H_2O=C_9H_6O_4+2C_6H_{12}O_6.$$

When the crystalline substance obtained as above is boiled with hydrochloric acid for a few minutes, and allowed to cool, needle-like crystals, having all the appearance of æsculetin, separate. When these latter are boiled with a solution of ferric chloride a fine green coloration and precipitate are produced; this reaction is characteristic of æsculetin. I consider it therefore proved that the crystalline substance obtained from *Hymenodictyon excelsum* is identical with æsculetin.

It is a somewhat singular circumstance that the bitter principle of this Indian tree should be the same as that of the horse-chestnut. The complete identity in the behaviour of the two substances leaves, however, no room for doubt. It is also remarkable that horse-chestnut bark has obtained a reputation on the continent of Europe, being like the *Hymenodictyon* in India, a good substitute for cinchona bark. Lindley and other authors mention that it has been recommended as a valuable febrifuge in intermittents.

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* Annalen d. Chemie und Pharmacie, Bd. xiv. 198.

† *Ibid.* lxxxvii. 186.

The occurrence of the same principle in genera so widely separated (botanically) as *Hymenodictyon* and *Æsculus* will recall to mind the more famous but parallel instance of the common constituent of tea and coffee. But in the former case there is a further interesting link of connection. In an exhaustive chemical examination made by Rochleder of the cotyledons and bark of the horse-chestnut, he found as a constituent of the former a substance isomeric with quinovine, the bitter constituent of cinchona leaves, and also occurring in the bark. The full significance of these coincidences will doubtless one day be made apparent.

The fluorescence of a slightly alkaline solution of the æsculetin obtained as above is the most beautiful instance of that phenomenon that has ever come under my notice. It is finely seen when the solution is illuminated by the light of sulphur burning in oxygen.

The cause of the loss of bitterness which the hymenodictyon bark suffers by keeping is more readily explained. Æsculin, by contact with changing organic substancs, becomes slowly converted into æsculetin, and glucose by the same decomposition that can be more immediately produced by boiling with acids. When a solution of æsculin is mixed with emulsion of sweet almonds, the change takes place in about two days. The soluble bitter substance of the fresh bark gradually changes into the sparingly soluble æsculetin, which has comparatively little taste, the bark becoming less bitter from day to day. That this is really the case can be experimentally shown by boiling a few fragments of *stale* bark in a test-tube with some water; on cooling, an abundance of glittering crystals will be deposited, which can readily be recognized by their form and their behavior towards polarized light. They form beautiful microscopic objects. Perfectly fresh bark yields no æsculetin when thus treated.

The bark of *Hymenodictyon excelsum* differs entirely in its chemical characters and products from cinchona bark. Containing no trace of quinine, the expectations once entertained of its medical value appear to have but little support in fact.—*Lond. Pharm. Jour., March,* 1868.

GRAPHITE IN CALIFORNIA.

The principal plumbago deposit of California, known as the Eureka Black Lead Mine, is situated on the west side of Tennessee Gulch, a tributary of Wood's Creek, about 1½ miles from Senora, the country seat of Tuolmune county, and about 68 miles from Stockton, the head of navigation on the San Joaquin River. The mineral exists as a well defined lode, from 20 to 30 ft. wide, having a dioritic foot-wall on the west, and a soft clay-slate hanging wall on the east. The trend of this lode is nearly north-east by south-west, and it dips very irregularly to the east, at some places being nearly vertical, and at others nearly horizontal. It has been traced and explored for 3,900 ft., beyond which there are but faint indications of its existence. The whole deposit, including the walls and vein, is enclosed in the limestones peculiar to Tuolmune and the adjoining counties. The graphite near the surface is much contaminated with the materials of the clay-state, which rapidly decomposes on exposure to the atmosphere. It was this circumstance that delayed the development of the mine, as it was found impossible to separate the earthy matter from the more valuable plumbago. About two years since it was discovered that the graphite floated on water, when a simple apparatus was employed, which separates nearly 100 tons per day, giving employment to some 25 laborers to wheel the stuff from the mine to the arrastre, about 50 ft. distant. This separating process is not now required, for a large portion of the vein below the surface, at a depth of 40 ft., the graphite is cut out in solid blocks, and sacked without any further preparation; but it is divided by lenticular bodies of clay-slate, a few inches thick, and sometimes extended for several feet. This material is heavily charged with graphite, and is washed in order to separate it. At the depth of 60 ft. the graphite is exceedingly solid and hard, with a very fine lustre. The whole material is taken out between the walls by an open cutting; all found not absolutely pure is washed, the other is bagged at once.

The product of the mine at present is about 1,000 tons per month, but is capable of an almost indefinite extension. The process of separating the graphite from the impurities is very simple. An inexpensive sort of large vat, with a stone bottom, 20 ft. in diameter, and 3 ft. deep, holds the materials, which are stirred up by iron rakes, fastened to four cross-bars projecting from an upright shaft, moved by a water-wheel. When in motion a small stream of water passes into this vat, an outlet to which exists a few inches from the surface; through this outlet the graphite passes with the water, and is led by spouts into broad tanks, where it temporarily subsides, when the dirty water is run off, and a large stream of clean water forces the graphite into a series of shallow tanks, in which it is dried by the sun, the whole process requiring about five days to complete. The tanks and reservoirs at present used cover several acres. The cost of production of the solid plumbago at the mine does not exceed 4s. per ton, two men in the lower workings being able to extract 10 tons per day of solid graphite, in blocks of any desired size. The water used on the mine costs but £10 per month, which sum is more than realized by gold found in the vat when cleaning up, there being a thin seam of auriferous quartz between the hanging wall and the graphite occasionally passing into it. Lumps of gold, worth 8s to £4 each, are sometimes found imbedded in the graphite.—*Chemical News, May* 1, 1868, *from Dicker's Mining Record.*

ABSINTHE.

The indulgence in absinthe, which already prevails to a great extent among all classes of Frenchmen, threatens to become as wide-spread in France and as injurious there as opium eating in China. If a visitor to Paris strolls along the boulevards from the Madeleine to the Bastile some summer's afternoon, between five and six o'clock—which is commonly called "the hour of absinthe"—he can hardly fail to remark hundreds of Parisians seated outside the various cafés or lounging at the counters of the wine shops and imbibing this insidious stimulant. At particular cafés—the Café de Bade for example—out of fifty idlers seated at the little round tables, forty-five will be found thus engaged. But it is not on the boulevards alone that absinthe is the special five o'clock beverage. In most of the wine shops in the faubourgs, in the "Quartier Latin," and round about the Ecole Militaire, you may see at that particular hour workmen, students, soldiers, clerks, charbonniers, chiffonniers, even, mixing their customary draughts of emerald-tinted poison, and watching the fantastic movements of the fluid as it sinks to the bottom of the glass; wherein it turns from green to an almost milky white, at the moment when the perfumes of the various aromatic plants from which it is distilled disengage themselves.

A quarter of a century ago absinthe was the drink of French coachmen, grooms and footmen, and people of the lowest class; to-day its most ardent lovers are to be found among educated and well-to-do Parisians. Literary men, professors, artists, actors, musicians, financiers, speculators, shopkeepers, even women, yield themselves up to its seductive influence—to those undefinable provocations which seem, they say, to impart renewed activity to an enfeebled brain, developing a world of new ideas, and which thus, it is believed, have inspired many a noble work of imagination in literature and art. It may be so; but then those who habitually excite the brain with absinthe soon discover that they can produce positively nothing without its aid, and that a time arrives when heavy stupor supercedes that excitement of the intellectual faculties which once seemed so easy and so harmless.

After the first draught of this poison, which Dr. Legrand, who has studied its effects, pronounces to be one of the greatest scourges of our time, you seem to lose your feet, and you mount to a boundless realm without horizon. You probably imagine that you are going in the direction of the infinite, whereas you are simply drifting into the incoherent. Absinthe affects the brain unlike any other stimulant; it produces neither the heavy drunkenness of beer, the furious inebriation of brandy, nor the exhilarant intoxication of wine. It is an ignoble poison, destroying life not until it has more or less brutalized its votaries, and made drivelling idiots of them.

There are two classes of absinthe drinkers. The one, after becoming accustomed to it for a short time, takes to imbibing it in considerable quantities, when all of a sudden delirium declares itself. The other is more regular, and at the same time more moderate in its libations; but upon them the effects, though necessarily more gradual, are none the less sure. Absinthe drinkers of the former class are usually noisy and aggressive during the period of intoxication, which, moreover, lasts much longer than drunkenness produced by spirits or wine, and is followed by extreme depression and a sensation of fatigue which is not to be got rid of. After a while the digestive organs become deranged, the appetite continues to diminish until it is altogether lost, and an intense thirst supplies its place. Now ensues a constant feeling of uneasiness, a painful anxiety, accompanied by sensations of giddiness and tinglings in the ears; and as the day declines, hallucinations of sight and hearing begin. A desire of seclusion from friends and acquaintances takes possession of the sufferer, on whose countenance strong marks of disquietude may be seen; his mind is oppressed by a settled melancholy, and his brain effected by a sort of sluggishness which indicates approaching idiocy. During its more active moments he is continually seeing either some imaginary persecutor from whom he is anxious to escape, or the fancied denunciator of some crime he dreams he has committed. From these phantoms he flies to hide himself, or advances passionately towards them protesting his innocence. At this stage the result is certain, and dissolution is rarely delayed very long.

The symptom that first causes disquiet to the habitual absinthe drinker is a peculiar affection of the muscles, commencing with fitful contractions of the lips and muscles of the face and tremblings in the arms, hands, and legs. These are presently accompanied by tinglings, numbness, and a distinct loss of physical power; the hair falls off, the countenance becomes wan and sad-looking, the body thin, the skin wrinkled and of a yellowish tinge—everything, in short, indicates marked decline. Simultaneously with all this, lesion of the brain takes place; sleep becomes more and more disturbed by dreams, nightmares, and sudden wakings; ordinary illusions, succeeded by giddiness and headaches, eventually give place to painful hallucinations, to delirium in its most depressing form, hypochondria, and marked impediment of speech. In the end come entire loss of intellect, general paralysis, and death.

There are two kinds of absinthe consumed in Paris, the common and the Swiss absinthe, the latter of which possesses almost double the intoxicating properties of the former. A few years ago the consumption of the common absinthe was three times that of the Swiss; but now the proportions are reversed, and four times as much Swiss absinthe is drunk as of the common quality. According to official statistics, France receives from Switzerland nearly 2,000,000 gallons of the noxious compound annually; in addition to which an enormous quantity made in Paris is sold as the veritable Swiss production.

Genuine absinthe is distilled from the leaves of major and minor absinthe, angelica roots, calamus aromaticus, aniseed, dittany leaves, and wild marjoram, all of which have been previously bruised and soaked for a period of eight days in alcohol. A quantity of oil of aniseed is then added, and the whole is carefully mixed together. Occasionally fennel, mint, etc., enter into the composition. The utmost care is taken to obtain the right shade of color, and to ensure the liquid expanding and whitening well when mixed with water. Should it prove to be deficient in these qualities the manufacturer does not hesitate to add indigo, hyssop, nettles, and even to have recourse to sulphate of copper to obtain the precise tint of green, or chloride of antimony to produce the milky white precipitate, both of these chemicals being deadly poisons.

Paris actually has its clubs of absinthe drinkers, the members of which are pledged to intoxicate themselves with no other stimulant, and even to drink no other fluid—the only pledges, it is believed, which they do not violate.

They assemble daily at some appointed place of rendezvous at a certain hour, and proceed to dissipate their energies and their centimes in draughts of that fatal poison which fills the public and private madhouses of Paris. These absinthe-drinking clubs are certainly not numerous, but liquor shops abound in all quarters of the city were absinthe may be said to be the stable drink; and lately several have sprung up which, to attract the youth of Paris to them, dispense the insidious beverage at the hands of pretty women.

In the French army drinking absinthe of the cheapest quality, and as a matter of course the most deleterious of all, used to prevail to such an extent that both military and medical commissmissions were appointed to report upon the practice and the effects resulting from it. The facts that came to light were so alarming that the Government not only formally interdicted its consumption, but made every endeavor to keep it beyond the reach of the soldiers. In Paris and other garrison towns these efforts were not particularly successful; but it fared hard with any camp followers of expeditionary corps in Algeria, or at Chalons or other parts of France where temporary camps were formed, who chanced to be detected in supplying absinthe to the troops. In the French navy its consumption is rigidly prohibited, not merely to the common seamen, but to the officers as well.—*Chemist and Druggist, May* 15, 1868, *from Pall Mall Gaz.*

VEGETABLE PARCHMENT PRESERVE COVERINGS.

Messrs. Thomas De la Rue & Co. are now supplying vegetable parchment, cut into suitable sizes for jar-coverings, in small packets, and as this cheap and efficient substitute for animal membrane is rapidly coming into general use we advise our readers to add these preserve coverings to their sundry wares. The vegetable parchment is in many respects superior to bladder for excluding air and moisture from preserves, and is much cheaper than the commonest description of skin. It is inodorous, and is not liable to promote fermentation, as, unlike animal membrane, it contains no nitrogen; it is less subject to the attacks of insects or mice, and is more elegant in appearance than bladder. Its use is attended with little trouble, for when the material has been wetted by immersion in water it is soft and yielding and can be readily stretched and tied over the jar. As evidence of its fitness for covering preserves we need simply mention that since the year 1859 nearly six millions pots have been covered with it by one firm alone. Vegetable parchment is merely unsized paper in which a remarkable physical alteration has been induced by the action of diluted sulphuric acid. Its formation appears to have been first noticed in 1847 by Poumarède and Figuier, who gave to the altered paper the name of *papyrin.* The discovery remained, however, without practical application until the year 1857, when it was patented in this country by Mr. W. E. Gaine, a gentleman whose attention had for many years been directed to the improvement of paper used for photographic and other technical purposes. The material was named by Mr. Gaine *vegetable parchment* or *parchment paper,* and is now manufactured on a large scale by Messrs. De la Rue & Co. To insure the conversion of the soft unsized paper—which is familiarly known as blotting-paper, and technically as *water-leaf*—into a tough material resembling animal parchment, many precautions are requisite. The sulphuric acid by which this strange conversion is effected must be of a certain strength, for if it be too weak the paper is dissolved, and if too strong it is charred. The proper degree of dilution is attained by mixing ordinary sulphuric acid of sp. gr. 1·845 with half its bulk of water. On passing the blotting-paper or water-leaf into this diluted acid, it is converted in a few seconds into a gelatinous gummy sheet. This, on being passed into water, in order to remove the adhering acid, becomes within a minute, a tough, elastic, skin-like substance, which, when thoroughly freed from acid, is the vegetable parchment of commerce. Freedom from acid is insured by repeated washings in water, and by immersion in a weak solution of ammonia, which converts any slight trace of acid that may remain into ammonic sulphate. The most curious fact connected with the formation of the vegetable parchment is that the chemical composition of the paper and of the sulphuric acid remains unchanged. The paper gains nothing and loses nothing, and if submitted to chemical analysis after conversion into parchment, it is found to have the exact composition that it had originally. The change is therefore purely a physical one, and must be ascribed to a rearrangement of the molecules of matter of which the paper is composed. The practical difficulties connected with the manufacture of this material on a large scale have been very great, but they have been successfully overcome by Messrs. De la Rue & Co. Mr. Gaine's original patent expired last year, but in consideration of the great merit of the invention and the expenses incurred in working it, the Judicial Committee of the Privy Council advised that the patent should be prolonged for five years dating from December last.—*Chemist and Druggist, May* 15, 1868.

NOTES ON THE CULTURE AND COMMERCE IN OPIUM IN ASIA MINOR.

By E. R. Heffter, of Smyrna.

The difficulties that surround agriculturists in this country are great and numerous, arising principally from the scarcity of laborers, want of capital, roads, etc., and so heavily do they press, that, were it not for the advantage of a fine soil, and climate, very little cultivation indeed could exist. The agricultural implements are of the most primitive description, and an idea of them can be formed by the fact that the plough does not go deeper into the soil than say four inches; another proof of the superiority of both climate and soil is, that all the crops are produced without irrigation. In the case, however, of the Opium grower, there are other difficulties besides entirely beyond his control, viz., the very sensitive nature of the poppy plant and particularly perilous condition of the crop when about being collected, which render its cultivation by far the most hazardous.

The poppy, unlike other plants, is generally sown at three different times in one season. For instance, the grower who intends sowing three acres of land, will do so one at a time, and will begin with the one acre about the middle of November or so, after the first winter rains; a second acre he will sow in December, and a third or last between February and March. The first sowing is called *Giuzmaly*, the second *Kishmaly*, and the third *Yazmaly*. Two are the reasons for this practice, both of which are of paramount importance. First, by this arrangement the chance of a total failure of the crops is obviated, and secondly, as it makes a difference of about a fortnight between the time the first and last sowings arrive at maturity, it economizes laborers, as in fact there would not be sufficient hands to gather half the quantity, if this system were not in a great measure pursued; as it is, when the crops succeed well, fully one-fourth of them is lost for want of hands.

A moist soil is indispensable to the success of the plant; too much moisture, on the other hand, is injurious; it therefore follows that with a wet winter it grows best on hilly grounds, and with a dry winter in low plains.

Owing to the difference of climate between the upper and lower country, in the former, which is the coldest, the first crops are gathered in July, and in the latter in May; just about the time the plant is maturing, should it happen to shower, a very great increase of the crop is obtained.

The calyx of the poppy, better known under the name of poppy-head, is that part of the plant whence the Opium is extracted. It is considered to have arrived at maturity when it has changed to a lighter green hue, and the extraction is then effected in the following manner:

An incision is made with a knife across the poppy-head, half round, horizontally, and some times horizontally and vertically too; this is generally done in an afternoon, and by the next morning it is found to be covered with milk, or juice, that during the night has oozed from it, which the gatherer scrapes with his knife, transferring it from the latter to a leaf of the poppy he holds in his left hand. At every alternate scraping the knife is wetted with saliva by drawing it through the mouth to prevent the juice from adhering to it.

Great precision is required in making the incision. Should it be too deep, and the interior coating containing the seed be also cut, the Opium is lost, as the juice would then run into the poppy-head, and again, if the incision is not deep enough, all the juice would not ooze out.

The repugnant practice of using saliva, and which is not always limited to the wetting of the knife, has been remonstrated upon, and water suggested as its substitute; but as this would entail more trouble, and perhaps loss of time, they pretend that, unless saliva is used, the Opium would turn, or ferment.

As soon as a sufficient quantity of the juice, or Opium, is collected to form a ball, it is wrapped in poppy leaves, and put to dry in the shade for a short time only. There is no given size for cakes of Opium and they vary very much, being from a few ounces to two or more pounds, but in some villages they are made, on an average, larger than in others.

Short as is the time between making the incision and collecting the Opium, it is still the most precarious one of all, for either a shower, by no means an unusual thing at that time of the year, a heavy dew, or a strong wind would suffice to destroy the crop of all those fields, that the day previous had been prepared for collecting.

As a rule, every poppy-head is only cut once, but as each plant produces several heads which don't arrive together at maturity, the operation of the incision and gathering of the juice is generally gone over twice, or thrice, in the same field, when the opportunity is taken of recutting such heads as exceed the usual size.

Amongst the peculiarities of the poppy there is this, that its yield does not entirely depend upon its condition, the amount of dew falling the night after the incision is made having the greatest influence on both quantity and quality. The heavier it is, as long as it is not so heavy as to wash away the milk, the greater the yield, but in proportion to this increase is also the weakness or inferiority of the production; this accounts for the greater proportion of inferior Opium usually found in large crops.

The Opium grower is generally a small land proprietor, who cultivates as much as his own family circle can attend to; nor would it be possible for large land holders to grow this article on a large scale, owing to the want of hands, but supposing even that laborers could be obtained, such would be the necessary expenditure for the same, that it is very questionable whether it would pay.

From the grower the Opium passes into the hands of the merchants of the interior, who, after collecting it together, pack it in gray calico bags, which they seal and place in a wicker basket of oblong shape; a very light weed is strewed between the cakes, to prevent them from sticking together, and in this condition it is brought down to Smyrna. And here it must be mentioned that, while Smyrna is the market proper for all the Opium grown in Asia Minor, nevertheless a very small quantity finds its way to the Constantinople market direct. The Opium remains in the baskets undisturbed till sold, and it is only on reaching the buyer's warehouse, that the seals are broken, and that the cakes are for the first time exposed. This takes place before buyer, seller, and public examiner, the last mentioned of whom then goes through the process of examining it piece by piece, and should either buyer or seller entertain a different opinion than his respecting any of the pieces, they are put aside and carefully re-examined at the end.

There are three qualities of Opium, viz: the *Prime, the Current, and the Inferior Opium, or Chikintee; a fourth quality might be said to exist, if we take to account the adulterated cakes, which are either entirely false, or a mixture of Opium with sand, gums, eggs, etc., in fact any thing considered least liable to detection. The prime consists either in the extra examination of the baskets, or what is more generally the case, in the Opium grown at certain districts. The current is the mercantile, or bulk of the crop, and the Chikintee is that rejected from both the prime and current qualities. Quality, however, is generally understood by the name of the place the article is grown at, and admitting that some places, on the whole, produce superior Opium to others, how far this may be correct in the case of a particular purchase is too obvious to require any comment. Besides, if place was a reliable guide as to quality, we come to the question, how is that of one place to be distinguished from that of another; of this we have a good illustration. The sales effected at the end of the season, as Opium coming from

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* Known in this market under the name of *Yerly*, which word means "of this place," viz: that grown round about Smyrna, implying thereby that only this, and the whole of it, is prime; so far from this being correct, there are in the vicinity of Smyrna some places producing very bad Opium, while in some of the farthest districts the quality is first rate.

the renowned districts often amount to three and four times the quantity those districts can possibly produce; this anomaly is only a proof as to the capacity of other places of producing a quality equal to that of the famed ones.

Commercially speaking, there is no rule by which one can become a judge of Opium, of however moderate aspirations; this ability can only be acquired through many years practice. In examining this article the use of nearly all the faculties is required: color, appearance, weight, scent, etc., serve as a guide, for often a dark colored cake is as good as a light one, or both may be bad; one scent as good as another; soft, or hard, etc., etc., may both be good or bad. To be a judge of Opium, therefore, one must be guided by a combination of circumstances, so variable in themselves that, as before mentioned, it can only be acquired by great experience. Such being the case, it may easily be imagined what people think here of the system pursued in some markets, where it is mostly judged by its external appearance.

The first baskets of Opium arrive in Smyrna about the end of May, or beginning of June, but for several reasons it is not safe to effect any shipments before the month of August. First, too fresh Opium is liable to get heated; secondly, the Chikintee is not so easily detected, and thirdly it gives a loss in weight.

Apart from agricultural causes, the crop of Opium, like that of all other productions, depends in a great measure on the ruling prices at the close of the season, which influences its greater or lesser sowing, so that after a large crop, with low prices, a small crop, and of course high prices, are almost sure to follow, and *vice-versa*. As a guide to the probable ruling prices of a season, the extent of the crop is, of course, a very good criterion; to ascertain this, however, with any degree of accuracy, the greatest difficulty is encountered. First of all, the merchants stockholders, who know well the influence of quantity on price, are always ready to misguide one, and secondly, no account can be obtained from the Government tax gatherer, as the tithes are usually sold by auction; it is only by dint of great exertions and experience that any thing like the truth can be ascertained.

The best time for effecting purchases, as a rule, is at the commencement of a season; with a small crop, however, the chances are often most in favor to the buyer at the end of a season, for, according to the remark that after a small crop comes a large one, prices are generally affected towards the close by the coming crop.

From a record published by the writer some months ago respecting the crops and shipments of Opium for the last ten years, viz: from July 1857, to June 1867, the following items may be deducted:

Average Crops.

1857—58.	3026 cases.	Average price	16, 28*
1859—60.	3013 "	" "	18, 58
1860—61.	3381 "	" "	17, 29
1863—64.	2866 "	" "	17, 88

3000 cases @ 17. s. 6. d. being the average quantity and price for the above four years.

Short Crops.

1858—59.	1439 cases.	Average price	19, 76
1862—63.	2236 "	" "	18, 01
1866—67.	2246 "	" "	16, 92

2000 cases @ 18. s. being the average quantity and price for above three years.

Large Crops.

1861—62.	4180 cases.	Average price	14, 39
1864—65.	3893 "	" "	15, 20
1865—66.	4135 "	" "	13, 83

4000 cases @ 14. s. 6. d. being the average quantity and price for the above three years.

The total for the ten years is 30,415 cases, or an average of 3000 cases per year @ 16, 39, say 16. s. 4½ d.

The months of June represent the smallest shipments, viz: 1326 cases, or an average of 132 cases per month.

The months of October the largest, viz: 4979 cases, or an average of 497 cases per month.

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* These prices are calculated in shillings, and hundredths of shillings, per English lb. free on board.

Before the epoch at which the writer's record begins a fair crop consisted of only 2000 baskets, and the average price was about 11 s. 6. d. The established progress of this article in so short a time is without parallel, the crops having nearly doubled themselves, and prices risen to fully 50 per cent. It would have been natural to suppose, that with such an increased production prices would have lowered in proportion, which no doubt would have been the case, if demand had not also kept pace. This, to-day, cannot be properly satisfied under a supply of say 3,500 baskets, beyond which only prices give way. It must not, however, be supposed that they can possibly go lower than the average of a full crop, for then it would not pay the agriculturist to cultivate this article, and would cause him to turn his attention to other and more profitable productions; this would naturally have the effect of diminishing considerably the ensuing crop, and raising its price. It is only in the farthest districts from Smyrna that the grower is obliged, as it were, to cling to Opium, for the expense of transit prevents the exportation of all other articles, which, remaining for local consumption, command only a low price. But as Opium alone, on account of its small bulk in comparison to value, can bear the forwarding charges, it is almost under any circumstances the best paying article for the said districts.

The fact must not be overlooked, that the demand is still slowly, but steadily increasing, and that on the other hand the productive capacities of the Opium districts are at their climax. When, therefore, prices are under or about a corresponding crop out of the last ten years, the opportunity should not be missed.

With reference to the average price of some twelve to fifteen years ago, it must be observed that the necessaries of life were at that time so much cheaper, that the then 11. s. 6. d. was perhaps more remunerate than the 16. s. 6. d. of the last ten years.

[Note.—This paper was published in Smyrna (Asia Minor) in April, 1868, in pamphlet form, by the author, who in prefatory note states that it was given at the request of several friends, and is based on his personal knowledge.]

PRODUCTION OF AMBER IN THE BALTIC.

The prodigious quantities of yellow amber collected by the explorers of Curischen Haff and the neighborhood of Memel, operating with 12 steam dredges and 3 ordinary dredge boats, have called attention anew to this interesting branch of commerce, now amounting to 35000 kilograms weight in a single year.

The results of recent researches show that the blue earths or ambraic littoral contains this precious substance in quantities averaging 25 to 160 grains per cubic foot.

The total production of the Baltic coast at present is nearly 100,000 kilograms, of which 50,000 are collected on the water courses and by fishing, 35,000 by dredging and 15,000 by trenching the sandy hillocks near the sea.

The value of amber varies infinitely, ranging between 7 cents and several hundred thalers (70 cts. each), and is fixed for each piece according to its color, size and form. A small part only can be employed for the mannfacture of cigar cases, brooches and other objects of art and luxury; the larger quantity, however, is used for beads to export to Africa, the south sea islands and the East Indies, where these articles have always been a favorite article of commerce, and have been in use in the east since the days of Herodotus.

About forty per cent. of the amber collected cannot be used for this purpose, owing to opacity or imperfections in structure. This quantity, viz., 40,000 kilos., is used for aromatic fumigation and for conversion into oil and lac of amber.

The oil and acid of amber are chiefly employed in the laboratories for the production of succinate of ammonia. Succinic acid is also used in dyeing and in photography. The amber varnish or lac is used for iron pipes, gates, machines and cast-iron, to which it is desirable to give an elegant deep black color. It is thought that this article will become much in vogue when its qualities are better known, and it is made already in large quantities in western Prussia.—*Annales du Commerce Exterieur et Jour. de Chim. Med.*

SOME REMARKS ON CRYSTALS CONTAINING FLUID.

By J. B. Dancer, F.R.A.S.

The author gave a brief history of the discovery of fluids in crystals, including Sir H. Davy's chemical experiments on the fluids and gasses obtained from the cavities in quartz crystals; Sir David Brewster's discovery of the pressure cavities in the diamond, ruby, emerald, amethyst, chrysoberyl, &c.; the existence of minute crystals in these cavities and the two new and remarkable fluids, which are immiscible, but sometimes found together in the same cavity—one a liquid hydrocarbon, named Brewstoline, the other Cryptoline; his experiments and examination of artificial crystals deposited from aqueous solutions; his examination of the Koh-i-noor diamond and others in the East India Company's museum; and the geological speculations to which these discoveries gave rise. Mr. Dancer mentioned the experiments of his late father and others in producing artificial gems by intense heat, and stated that his own attention was drawn to this subject some twenty-four years since, by Sir David Brewster presenting him with a specimen of topaz containing fluid. Since that time he had examined a large number of crystals, of various kinds, from the collections of friends; and had found fluid in quartz from South America, Norway, the Alps, Ireland, Snowdon, and the Isle of Man; and in fluor spar from Derbyshire; this latter specimen contained a considerable quantity of fluid, which burst the crystal at 180° temperature.* He suggested the employment of the microscope as a valuable assistance in detecting spurious from real gems; very few of the latter are perfect, and the flaws and cavities are so distinct in character from those which are so abundant generally in artificial gems that very little experience is sufficient for the purpose. This mode of testing of course is limited to transparent crystals, but might be employed when the usual methods are not practicable. He also mentioned Mr. Sorby's (F.R.S.) discovery of fluid cavities in the quartz of granite, in the quartz of volcanic rocks, and also in the feldspar ejected from the crater of Vesuvius, and Mr. Sorby's method of determining the temperature at which various rocks and minerals are formed. At the conclusion of the meeting, crystals containing fluid were exhibited under the microscope, and the expansion of the fluid by elevating the temperature of the crystal whilst under examination.—*Chem. News*, *March*, 1868.

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*After this paper was written, Sir David Brewster informed the author that the fluid contained in crystals of fluor spar was water, and that the cavities burst at a temperature of 150°.

ON CRYSTALLIZATION OF SULPHUR.

An interesting experiment has been made by M. Schützenberger upon the crystallization of sulphur. He filled a mattrass of a capacity of 150 or 200 grammes, with refined sulphur, commercially pure, so that when fused the liquid occupied the whole of the space below the neck; the upper part of the neck was drawn out into a capillary tube which was twisted several times, but left freely open to the atmosphere. The sulphur being melted in a bath of oil heated to 120°, the flask was placed in water heated to 95°. In these conditions the sulphur remains perfectly fluid for hours, even when occasionally moved and drawn out of the hot water. If the temperature be made to fall very slowly, transparent crystals, possessing the same density as the melted sulphur, form either on the surface or in the midst of the fluid at about 90°. The mass of crystals gradually augments, but with great slowness; sometimes they are isolated, at others united in groups of two, three, four, &c. The amount of crystals being considered sufficient to separate them, the mattrass is sharply inverted, so as to cool and solidify the melted sulphur in the neck. Thus the crystals are separated from the rest of the sulphur, and only remain suspended by their peaks. They are transparent, and remain so indefinitely; in form they are octahedral, and bear close resemblance to natural crystals. Measurement of the angles has confirmed their identity. The experiment is surer when two or three drops of sulphide of carbon are added to the sulphur before fusion; the phenomenon takes place, however, independently of this admixture. The results are similar to those of M. Pasteur, who observed the formation in a solution of sulphur in a hydrocarbon, first of prismatic crystals, afterwards, when the temperature was sufficiently low, of octahedra. By this experiment of M. Schützenberger's, it is proved that melted sulphur crystallizes below 100° in octahedra of the fourth system, without the aid of any solvent. The facts will probably be turned to account in the study of the formation of natural crystals.—*Lond. Chem. News*, May 22, 1868.

ON THE MANUFACTURE OF PHOSPHATE OF SODA AND FLUORIDE OF SODIUM.

By M. Jean.

A note on the manufacture of phosphate of soda and fluoride of sodium has been published by M. Jean. The process usually adopted in the fabrication of neutral phosphate of soda consists in attacking the tribasic phosphate of lime, either in the form of nodules or calcined bones, with sulphuric acid; thus a solution of acid phosphate of lime containing some sulphate and excess of sulphuric acid is obtained. This solution of acid phosphate of lime is treated with carbonate of soda, when phosphate of soda and carbonate of lime result, but a large quantity of sulphate of soda, or otherwise of sulphate of lime, and free sulphuric acid requires separating: repeated and carefully conducted crystallizations are therefore necessary. M. Jean made experiments with a view to founding a better process.

The following are notes of experiments:—(I.) In fusing a mixture of one equivalent of tribasic phosphate of lime, two equivalents of sulphate of soda and carbon in excess, and extracting with cold water, a strongly sulphurous liquor containing phosphate of soda was obtained. The residue, chiefly oxysulphide of calcium, contained about two-thirds of the phosphate of calcium unattacked. (2.) A second experiment made with three equivalents of sulphate gave soluble acid phosphate 14 per cent., acid in an insoluble form 13·71 per cent.: with three equivalents, then, about half the phosphate is obtained in the form of neutral phosphate of soda. (3.) By increasing the amount of sulphate to six equivalents, 20·6 per cent. was the yield of soluble phosphate, while the residue contained 1·933 per cent. of acid combined with lime. M. Jean attributes this small quantity of phosphoric acid to the action of caustic lime, always present to a slight extent in the residue, upon the phosphate of soda after lixiviation. The decomposition of the tribasic phosphate of lime into neutral phosphate of soda may then be considered complete. Unfortunately the phosphate obtained in this process is mixed with a large proportion of sulphide of sodium, rendering the separation by crystallization very difficult, and consequently destroying the industrial value of the process. The reaction has given better results in the preparation of fluoride of sodium. A mixture of 40 parts of fluoride of calcium, 80 of sulphate of soda and carbon in excess, was fused in a metal crucible. The mass exhausted with water gave a solution containing sulphide and fluoride of sodium; only a trace of hydrofluoric acid was detected in the residue, composed as before of oxysulphide of calcium. Another fusion was made, in which carbonate of lime was added, to endeavor if possible to remove the soluble sulphur compounds. The mixture was made of 100 parts of fluoride of calcium, 140 of carbonate of lime, 200 of sulphate of soda and carbon. In treating the mass with water, a limpid solution of fluoride of sodium was obtained quite free from sulphide. Traces of hydrofluoric acid were detected in the residue. By concentration and crystallization, fluoride of sodium in great purity is obtained. Should the application of this salt at any time become important, this process will enable fluoride of sodium to be manufactured in large quantity and at a low price.—*London Chemical News*, May 22, 1868.

DEATH FOLLOWING THE ADMINISTRATION OF TWO-FIFTHS OF A GRAIN OF ELATERIUM.

By A. G. Craig, M. D., Ghent, Ky.

On the morning of the 23d of March, 1868, I was called to see Mrs. G.——, aged 70 years, whom I found with dropsy, dependent on disease of the heart and liver. Her abdomen was enormously distended, and there was also considerable anasarca. She had been for several weeks, previous to this time, under the treatment of a homœopathist, who pronounced her case to be "wind in the intestines," and promised a cure in a few weeks. I informed the family that it was not possible for her to recover; that she would live only a short time; and that all I could do would be to give anodynes to relieve her of pain, and prolong life by the administration of diuretics, hydragogue cathartics, etc. She was very feeble—decubitus on left side. Her skin was cool and dry; pulse 100, small, quick, and feeble; breathing slow and labored; tongue rather dry, and covered with a yellowish coat; considerable thirst; appetite gone, and stomach so irritable that almost everything she swallowed was ejected; bowels not moved for two days, and then with castor oil. I administered to her two-fifths of a grain of elaterium, and took my departure. At four o'clock in the afternoon I was summoned to her bedside. I was informed that a few minutes after she had taken the medicine she commenced purging, and had had a dozen or more watery stools before my arrival. She was greatly prostrated, could only speak in a whisper, and as I approached her she took me by the hand and said, "Doctor, I fear you have killed me." Her pulse was scarcely perceptible. I commenced at once with the administration of stimulants, and small doses of opium, combined with the acetate of lead. Her bowels were moved every five or ten minutes—stools watery. The purging was not fully arrested until 10 o'clock, P. M. I left at midnight. She never rallied. Death took place at five o'clock, P. M., March 25th.

I report this case to warn the practitioner against commencing with the dose of elaterium recommended in the U. S. Dispensatory, 12th edition, page 364: "The full dose of commercial elaterium is often from one to two grains; but, as in this quantity it often vomits if of good quality, the best plan is to give it in the dose of a quarter or half of a grain, repeated every hour until it operates." I learned, on my second visit to this patient, that a tablespoonful of castor oil usually operated within five minutes after administration, and that the sulphate of magnesia, in an ordinary dose, purged her almost as severely as the elaterium, and produced similar dejections. It would be well for the practitioner to inquire into the idiosyncrasies of his patient before administering remedies, which I regret I neglected to do in this case.—*Western Journal of Medicine*, May, 1868.

NOTICE.

American Pharmaceutical Association.

The sixteenth annual meeting of the American Pharmaceutical Association will be held in the city of Philadelphia, on the second Tuesday (the 8th day) of September, 1868, at 3 o'clock, P. M., at the new Hall of the College of Pharmacy.

It is confidently expected that the various standing committees, through their chairmen, will be prepared in time to furnish the Association with full and highly instructive reports on the many interesting subjects which should occupy our earnest attention.

The objects of the Association and qualifications for membership are set forth in Articles I and II, Section 1, of the Constitution, as follows:

ARTICLE I.

This Association shall be called the American Pharmaceutical Association. Its aim shall be to unite the educated and reputable pharmaceutists and druggists of the United States in the following objects:

1st. To improve and regulate the drug market, by preventing the importation of inferior, adulterated or deteriorated drugs, and by detecting and exposing home adulteration.

2d. To establish the relations between druggists, pharmaceutists, physicians and the people at large upon just principles, which shall promote the public welfare and tend to mutual strength and advantage.

3d. To improve the science and the art of pharmacy by diffusing scientific knowledge among apothecaries and druggists, fostering pharmaceutical literature, developing talent, stimulating discovery and invention, and encouraging home production and manufacture in the several departments of the drug business.

4th. To regulate the system of apprenticeship and employment so as to prevent, as far as practicable, the evils flowing from deficient training in the responsible duties of preparing, dispensing and selling medicines.

5th. To suppress empyricism, and as much as possible to restrict the dispensing and sale of medicines to regularly educated druggists and apothecaries.

ARTICLE II.—*Of the Members.*

Section 1. Every pharmaceutist and druggist, of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, and those teachers of pharmacy, chemistry and botany who may be specially interested in pharmacy and materia medica, who, after duly considering the objects of the Association and the obligations of its Constitution, are willing to subscribe to them, are eligible to membership.

Those desiring to join are requested to apply for blank applications to the Chairman of the Executive Committee, Thos. S. Wiegand, N. E. cor. 6th and Arch Sts., Philad,, or to the Permanent Secretary, John. M. Maisch, 1607 Ridge Avenue, Philad.

JOHN MILHAU, *President.*

New York, June 9th, 1868.

Exhibition connected with the 16th Annual Meeting of the American Pharmaceutical Association.

The Committee of Arrangements propose to have an exhibition of articles connected with the drug business, including chemicals, drugs, pharmaceutical preparations, apparatus, books, and miscellaneous articles. Those members of the Association and others wishing to contribute to the display will please address a note to William C. Bakes, 800 Arch St., Chairman of the sub-committee on exhibition, stating the character of the articles they propose exhibiting. All articles should be delivered free of expense at the hall of the Philadelphia College of Pharmacy, Tenth St. above Cherry, between the 1st and 5th of September, 1868.

Strangers arriving in Philadelphia to attend the meeting will find a committee of reception at the Continental Hotel, and information may be had from the Chairman and other members of the committee.

Alfred B. Taylor, 1015 Chestnut St.,
William Procter, Jr., 500 S. 9th St.,
Prof. Edward Parrish, 800 Arch St.,
James T. Shinn, Broad and Spruce Sts.,
Charles Bullock, 6th and Arch Sts.,
William C. Bakes, 800 Arch St.

List of the Contributors to the Building Fund for the new Hall of the Philadelphia College of Pharmacy.

It has been deemed right and proper to publish a list of those contributors to the building fund of the College of Pharmacy who have already paid their subscriptions, which list may be considered as an official acknowledgement of the sums specified ; leaving the names of those other contributors who have not paid in, and those members and others yet to be called upon who may be disposed to aid the work, for a continued list to be published in September, before the inauguration of the Hall. The names are put in the order that the payments were made, and the amounts are in all cases the voluntary gifts of the contributors, some of whom could illy afford the moderate sums given, but who manifested a generous interest in the success of the Committee, by giving their mite.

As the sum raised by contributions is not yet half of the balance required to complete the building, it is very desirable that every pharmaceutist who intends contributing should do so at once to the extent of his ability, that the Building Committee may not be hampered in completing their task,—and send his contribution to the Treasurer, Dillwyn Parrish, No. 800 Arch St., Philadelphia. Of the many graduates of our College who have succeeded in business, surely there are some who feel a warm side for their alma mater, and will help her to rebuild her walls.

Powers & Weightman	$1000 00	John S. Erben	50 00
W. B Webb	25 00	Mulford Marshall	25 00
Bennet L. Smedley	10 00	Cash	5 00

Caleb R. Keeney	25 00
Wm. Taylor	25 00
Henry Bower	150 00
Rosengarten & Sons	200 00
John Goodyear	20 00
E. M. Roche	10 00
Kearney & Brother	5 00
Jos. B. Correll	2 00
J. S. Miller	5 00
C. H. Merklin	1 50
F. Zerman	10 00
Herman Fritsch	10 00
Daniel S. Jones	50 00
S. S. Bunting	50 00
O. S. Hubbell	25 00
J. B. Moore	20 00
Jos. Harvey	1 00
J. W. Kyle	1 00
Schott & Ruch	1 00
Thos. J. Husband	50 00
Wilson H. Pile	20 00
S. Creadick	3 00
W. B. Thompson	10 00
Alonzo Robbins	25 00
Robert Nebinger	25 00
Jas. C. Wells	10 00
E. R. Perrot	5 00
R. Keys	10 00
J. Weber	5 00
N. Ranck	10 00
A. Wiltberger	100 00
Smith & Shoemaker	100 00
Wetherill & Bro	200 00
Hansell & Bro	40 00
R. F. Fairthorne	5 00
Carter & Scattergood	100 00
J. F. White	10 00
W. J. McClain	5 00
John A. Milliac	3 00
Wm. Procter, Jr	100 00
Jas. T. Shinn	100 00
Geo. M. Snowden	20 00
J. L. Shoemaker	10 00
Thos. E. Pryor	5 00
L. A. Messinger	5 00
B. F. Johnson	5 00
John M. Whitall	100 00
Edwin Thomas	20 00
Theophilus Fischer	5 00
H. C. Blair's Sons	50 00
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Beates & Miller	25 00
Wm. Biddle	50 00
Geo. Gardom	10 00
Jos. C. Turnpenny	50 00
Geo. Y. Shoemaker	20 00
Henry Cramer	50 00
Henry Blithe	5 00
Jos. Heathcote	5 00
Chas. W. Hancock	25 00
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Robert C. Davis	50 00
Newbold & Bro	5 00
Joseph Jeanes	100 00
John S. Newton & Bro	15 00
Alfred Tatum	10 00
S. H. Warner	2 00
John E. Grove	5 00
A. W. Robbins	2 00
W. E. Knight	25 00
Dillwyn Parrish	100 00
Paul G. Oliver	20 00
Isaac Sharpless	5 00
Peter Williamson	200 00
G. D. Wetherill & Co	200 00
Louis G. Bauer	20 00
V. H. Smith & Co	25 00
G. H. Davis	25 00
John Bley	10 00
Philip S. Reed	5 00
John Moffet	5 00
C. H. Eggert	5 00
G. W. Eldridge	15 00
J. B. Ferguson	5 00

Editorial Department.

The New College Hall.—The Meeting of the Association.—Notwithstanding the very unfavorable weather since this work was commenced, the advance already made promises to get the building ready by the first of September, or so nearly completed that it may be used for the purposes of the annual meeting of the American Pharmaceutical Association. On the strength of this opinion the announcement is made on page 375, and the invitation given to hold an exhibition of articles connected with our profession,—chemicals, drugs, pharmaceutical preparations, apparatus, and miscellaneous articles. In view of this need for the hall, it will require that every exertion should be made to further the arrangements for its completion. On the 24th of June the "corner stone" was laid, and a deposit made in it of a glass-stoppered bottle containing various printed documents and papers connected with the College, and a copy of the Public Ledger. But few members were present, owing to a misunderstanding of the time, and no address was made. The foundation walls have been successfully and well built, and the first story of brick-work up, and ready for the second floor joice. As the time approaches for occupying the Hall, the several committees having in charge the library, museum and apparatus, will have a busy time in transferring their several charges to the new premises, and getting all arranged. The funds necessary to complete the building have not been all collected. Whilst many have been quite liberal in their contributions, many have been less so, and others disposed to give the cold shoulder. This should not be. Every pharmaceutist should feel an interest in the success of his profession, and as this depends almost wholly on pharmaceutical education, he should feel and manifest a practical interest in the only institution in our city connected with that profession. But, no doubt, there has been a loss sustained by the want of vigor and earnestness which for some years past has marked the policy of the Philadelphia College of Pharmacy. What has been done has been the work of but a fraction of its members,—most of these do not come to the meetings, and there have been no occasions to bring them together that they may become acquainted with each other, and interested in the Institution to which they belong. It has appeared to us that the present juncture offers a good opportunity to work a change in these regards. A new Hall, to build which the material aid of all members and others is needed, and the inauguration of the new Hall by the meeting of the national Association,—certainly these are sufficient reasons for bringing all together, earnestly, professionally, and scientifically. Every reputable pharmaceutist in this city should be a member of the College of Pharmacy, and of the National Association, and in this way, if no other, aid in raising the status of our profession. The Pharmaceutical Association now numbers more than seven hundred members in all parts of our country, and representatives from all sections will be in attendance. We hope to see many faces from south of the Potomac come to join hands in this truly national society of pharmaceutists.

In relation to the contributions to the building fund, the Treasurer of the Building Committee has furnished a list which will be found at page 376, and we hope it will induce many others to extend their aid in season.

Dr. Robley Dunglison, so long and favorably known as a teacher and writer of medicine, has resigned the chair of Physiology in the Jefferson College, and the vacancy thus created has been filled by the election of Dr. John Aitken Meigs, of Philadelphia. Although not personally acquainted with Dr. Meigs, we are informed by those who are that the choice of the Trustees is eminently judicious.

Erratum.—In the notice of William Herapath in our May number, we inadvertently attributed to him the discovery of iodosulphate of quinia, which was made by his son, Dr. William A. Herapath, also a chemist.

Annuaire de Therapeutique de Matiere Médicale de Pharmacie et de Toxicologie pour 1868*;* contenant le Résumé des Travaux Therapeutiques et Toxicologiques publiés en 1867 et les formules des medicaments nouveaux; suivi d'un mémoire sur café, par A. Bouchardat. 28e année. Paris, Germer Bailliére, 1868: pp. 328, 24mo.

Again this little annual presents itself for notice. It is the twenty-eighth of the series, and consists of extracts from the periodical literature of medicine and pharmacy during 1867, principally continental. The volume for 1866 was translated and published last year, and we presume this also will be rendered. The articles of interest under the head of narcotics, anæsthetics, stimulants, alteratives and revulsives are numerous, but we have only space to offer an extract from one of the latter. M. Rigollet, in speaking of his *mustard paper*, (sinapisme en feuilles) and referring to its advantages in avoiding the use of linen and the inconveniences of preparing an ordinary poultice, says:

"On a sheet of paper of a certain firmness, I fix a layer of flour of Alsace mustard one millimetre (one-thirteenth of an inch) thick. It was not difficult to imitate the industrial process for the manufacture of glass paper or velvety wall paper, in which glass powder or cloth nap are held on the surface by a layer of glue. But it was necessary to find a viscous liquid which contained neither water, alcohol or resinous matter to bind the mustard. Water would develop the essential oil; alcohol coagulate the myrosine, and stop the production of volatile oil, whilst the fatty bodies would prevent the action of water on the mustard to develop its power." "Only one substance has succeeded; this is caoutchouc dissolved in bisulphuret of carbon or a volatile oil. Before the operation the solvent evaporates and leaves the mustard meal imprisoned in a network of fibres adhering to the paper, and which are as permeable by water as the meshes of a seive. This sheet of paper, thus prepared, becomes an active sinapism, if before using it is soaked in water during 12 or 15 seconds. Six grammes (a drachm and a half) of mustard under this form suffices to irritate with much energy a square decimetre of surface (four inches). It is true that I concentrate the properties of the mustard by removing its 28 per cent. of fixed oil, an idea which is not new, but suggested long ago by Soubieran, and which is easily effected by sulphuret of carbon or by light coal oil."

More than fifty pages are devoted at the end to the subject of coffee, in its hygienic and therapeutic aspects —the result of a conference of "the Polytechnic Association," held at Paris July 28, 1867,—and which includes a historical account of its introduction into Europe. Those of our medical and pharmaceutical readers who are familiar with the French will derive advantage from the importation of the volume, which is quite moderate in price.

A Manual of the Dissection of the Human Body. By Luther Holden, F.R.C S., Assistant Surgeon of and Lecturer on Anatomy at St. Bartholomew's Hospital, London; with notes and additions by Erskine Mason, M.D., Demonstrator of Anatomy at the College of Physicians and Surgeons, New York. Illustrated with numerous wood engravings. New York, Robert M. De Witt, publisher, No. 3 Frankfort St.: pp. 588, octavo. (From the editor and publisher.)

It is rarely that one meets with a book that keeps so closely and regularly to the text as does Holden's Manual. Designed as a guide to the student in the very important study of the practical anatomy of the human body, it enters on the subject in a clear, straightforward manner, beginning with the neck, and proceeding through the various portions of the system of muscles, nerves, ligaments and vessels, and illustrating them with a great variety of excellent original wood-cuts and diagrams, which greatly facilitate their comprehension.

The style is easy, the descriptive phraseology in short sections, and free from redundancy, and the type, press-work, paper and binding unusually clear and excellent. The commencing of each paragraph with the technical name of the organ or part described, in large, bold type, is a great merit. from the student's stand-point.

The *tables* at the end give a useful summing up, in the form of a series of bird's eye views of the arrangement of the parts to be studied.

The additions of the editor appear to be judicious, and, on the whole, the volume must prove to be a valuable addition to the means of teaching anatomy.

Therapeutics and Materia Medica: a systematic treatise on the action and uses of medicinal agents, including their description and history. By Alfred Stillé, M.D., Professer of Theory and Practice of Medicine, &c., in the University of Pennsylvania, &c., &c. Third edition, revised and enlarged, in two volumes. Philadelphia, Henry C. Lea, 1868: pp. 1688, octavo.

This important work now for the third time comes to us for notice, and were it not quite unnecessary to bring forward its principal features, now so generally known to medical and some pharmaceutical readers, we might reiterate what has been said of them on former occasions, in vol. xxxii, p. 190, and vol. xxxvi, p. 542. The author informs us in the preface to this edition that he now treats for the first time of *chromic acid*, *permanganate of potassa*, the *sulphites of soda*, etc., carbolic acid, nitrous oxide, *rhigolene*, and *Calabar bean*; and that the articles on bromine and electricity are very materially changed and extended. On other occasions we have pointed out several omissions or errors, several of which were of sufficient importance to merit attention, in regard to the pharmaceutical part of the work. As we find that these errors and omissions have been reproduced and continued in the third edition, there is no encouragement to point out more; yet there are some omissions which strike us so forcibly that, at the risk of wasting the space they occupy, we will state them.

Under the article Veratrum viride no allusion is made to the recent careful experiments of Chas. Bullock on the chemical constituents of this drug, showing that it contains two distinct alkaloids, and that neither of them is *identical* with veratria. Mr. Bullock also corrects the previous belief, that the resin of Veratrum viride possessed sedative powers, and was able to show that this quality, previously attributed to it, was due to adhering alkaloids.—(Amer. Jour. Pharm., Sept. 1865, March, 1866.)

In the Proceedings of the American Pharmaceutical Association, volume for 1865, Prof. Maisch demonstrated that toxicodendron owes its irritant properties to a peculiar acid, to which he gave the name of *toxicodendric* acid, and that the physiological properties of the drug were due to this acid; he made and described experiments on his own person. No allusion is made to this paper or its results, though extensively copied in European Journals.

Crotonole, as the irritant principle of Croton tiglum, is not referred to; and lobelina is described as "a clear *volatile* liquid," when it is well ascertained that it is not volatile, but is destructible by heat. We have not been able to find any mention of *Hydrastis canadensis*, *Leptandra virginica*, *Gelsemium sempervirens*, *Gillenia trifoliata*, *Matico*, *Nectandra*, *Stillingia*, Vanilla, and other officinal drugs of greater or less importance, and which the student should be able to find in so comprehensive a work. Although brandy and whiskey are alluded to under alcohol, they, equally with wine, which is prominently noticed, deserve separate chapters.

In pointing out these omissions, it is only that they may be noticed in a new revision; believing, whatever may be the author's opinion of their merits, that they deserve to be described and noticed quite as much as many foreign or antique drugs which have long figured in pharmacological works, and which here find a place.

Compte Rendu des Congrès Pharmaceutiques reunis Aout 1867, *a l'école supérieure de Pharmacie de Paris.* Douzieme Session du Congrès des Sociétés de Pharmacie de France. Deuxime Session du Congrès International des Associations et Sociétés de Pharmaciens. Paris, Bouchard-Huzard; pp. 328, octavo: in paper.

The conventions of which this volume constitutes the proceedings met in Paris between the 17th and 24th of August, 1867, and have already been alluded to in previous numbers. The first 128 pages refer to the Congress of the French Societies, whilst the last 200 pages refer to the international Congress, to which delegates were sent from this country. Our notice given previously will suffice; but it is with regret that we observe that, by some oversight, the name of our friend Albert E. Ebert, as a delegate from the Chicago College of Pharmacy, does not appear in the proceedings. This must be accidental, but it has given offence to the gentlemen of the Chicago College. Our belief is that it is entirely accidental, as M. Robinet, the Secretary, is beyond all suspicion of intentionally giving cause of offence. We doubt not the omission will be corrected in the next volume issued. The next Congress will be in 1869, and will probably be held in Vienna, when the essay of the first authoritative Universal Pharmacopœia will probably be considered, and possibly adopted. It will be long before the ameliorations sought to be introduced into pharmacy by this Congress will be able to assimilate the practice of England and the United States with that of continental Europe. Meanwhile, the intercourse of national societies will pave the way for mutual good offices, and whatever is best and most desirable in the pharmacy of every country may be offered in all for acceptance.

Proceedings of the American Academy of Arts and Sciences from Sept. 11, 1866, *to June* 11, 1867: pp. 144.

This continuation of the proceedings has been received, and should have been acknowledged in our last issue. Among the subjects it treats of is an obituary notice of the late Prof. A. D. Bache.

Report of the Commissioner of Agriculture for the year 1866. Washington, Government Printing Office, 1867: pp. 656, octavo: with 36 illustrations. From Mr. Daniel S. Fox, of Washington, D. C.

Much has been said and written regarding the wastefulness and want of utility of what is done in this department of the Patent Office operations, and especially in the manner of disseminating seeds without sufficiently testing their merit. Be this as it may, there can be no doubt that much good comes of the publication of the annual volume of the Commissioner, which presents in a permanent and readable form a digest of much that floats through the periodicals, and which may be passed over. Among the items of interest is "Pisciculture with reference to American waters," by Theodore Gill, M. D.,—a subject of great interest to many persons here, and which is attracting careful study in Europe, with a view to supplying human food. Another is the Cultivation of Cinchona, being a report on the subject by Dr. Thomas Antisell, who, after giving the results of the English and Dutch efforts in India, advocates the attempt being made in the Sierra Nevada region of California. Whilst various nations are thus making praiseworthy efforts to propagate this useful genus of medicinal plants, it does not appear that any political influence has been given by other nations to induce the South American republics to use their authority to restore the fast disappearing forests of cinchona. Would it not present a legitimate subject for diplomatic influence by the ministers of other nations, on the score of humanity?

Annual Report of the Board of Regents of the Smithsonian Institution; showing the operations, expenditures, and condition of the Institution for the year 1866. Washington, 1867: pp. 469, octavo; being miscellaneous document No. 83, published by the 39th Congress, second session. From Mr. Daniel S. Fox, of Washington, D. C.

Annual Report of the Commissioner of Patents for the year 1866, in three volumes, pp. 2741, octavo. Washington, Government Printing Office, 1867. From Mr. Daniel S. Fox, of Washington, D. C.

The Trustees of the Smithsonian Institution again offer their annual report. Prof. Henry, in his report, informs that the fund, by the good management of the Trustees, is now nearly $150,000 more than the original bequest; that the library of the Institution has been transferred to the library of Congress, which, while it curtails in some measure the personal convenience of the investigators immediately connected with the Institution, really gives them the advantages of the great library of Congress, which, including the recent purchase of the collection of Mr. Force, is the largest library in the United States. The measure receives the approval of Professor Henry, who would also like to see the museum transferred to other auspices, so that the whole proceeds of the fund might be disposed of for the "increase and diffusion of knowledge among men." That Congress will eventually gather all the collections in one extensive national museum, will probably be the ultimate result.

The reconstruction of the building has been carried on during the past year "as rapidly as a due regard to the character of the work would allow." The publications issued by the Institution have been as extensive as usual, and include astronomical, geological and natural historical researches and observations.

The system of international scientific and literary exchanges, so long and usefully carried on, has been maintained during the year, 1170 packages being sent abroad, and over 8000 received in return. Many other features of the report claim notice, but our space will not admit of further remark than to express the hope that this valuable Institution may long continue to extend its influence for the benefit of all men.

The two first volumes of the Patent Office Report are a descriptive catalogue of the patents of 1866; whilst the third volume, of 1096 pages, consists wholly of plates and diagrams of the patents. The immense extent of the Patent Office operations may be estimated approximately when three such volumes are required to give an outline of the patents issued in a single year.

Circular No. 1. *War Department, Surgeon General's Office, Washington*, June 10, 1868.

Report on Epidemic Cholera and Yellow Fever in the Army of the United States during the year 1867. Washington, 1868: pp. 195, quarto, in paper. From Surgeon General Barnes.

This volume consists of the report of Assistant Surgeon J. J. Woodward, U.S.A , to the Surgeon General, on these epidemics in the army, followed by statistical tables and extracts from the reports of army officers at the various southern and south-western posts where these diseases prevailed. The volume is highly creditable to the Department, and will be valued by all who feel interested in the study of these destructive epidemics in connection with military discipline and exposure.

Lessons in Physical Diagnosis. By Alfred L. Loomis, M. D., Professor of the Institutes and Practice of Medicine in the medical department of the University of New York, &c. New York, Robert M. De Witt: pp. 159, octavo.

This work has been written "in compliance with the request frequently made of the author's classes in physical diagnosis, to furnish them with a guide in the practice of this art." The author claims to have been influenced by a desire "to collect into a plain and comprehensive compend the results of the research of many inquirers," rather than to assert any views of his own. The book is illustrated with several cuts, and is well printed and bound.

The American Naturalist.—Among the many exchanges which come to us monthly, none is more welcome than the American Naturalist, and certainly none better printed. The July number has already come to hand, and, being devoted to marine plants and animals, is called the "sea-side number," and will be sought as a companion by the sojourners of Newport and Cape May.

Lessons in Elementary Chemistry, inorganic and organic. By Henry E. Roscoe, B.A., F.R.S., Professor of Chemistry in Owen's College, Manchester. New York, Wm. Wood & Co., publishers, 61 Walker St.; 1868: pp. 383, 12mo. From the publishers, through Lindsay & Blakiston. Received too late for notice in this number. Price, $1.50.

Materia Medica for the use of Students. By John B. Biddle, M.D., Professor of Materia Medica in Jefferson Medical College, &c. Third edition, enlarged, with illustrations. Philadelphia, Lindsay & Blakiston, 1868: pp. 384, octavo. From the publishers; too late for notice in this number. $4.00.

THE

AMERICAN JOURNAL OF PHARMACY.

SEPTEMBER, 1868.

ON SOME PREPARATIONS OF ASSAFŒTIDA.

By J. B. Moore.

In many nervous affections, both in adults and children, there is perhaps no remedy in the materia medica more potent or valuable than assafœtida, and no medicine would be more frequently prescribed by physicians, were it not for its extremely repulsive odor and taste. These qualities alone deprive this invaluable old remedy of its popularity and usefulness to a very great extent. It is now being occasionally prescribed by a few of our best physicians, both alone and in conjunction with other medicines, in the form of suppository, and, I understand, with very satisfactory results. If prepared from *pure* and *fresh* tears, I cannot see why it would not exert its therapeutic effects upon the system when administered in this form, as well as many other remedies which have been proved by experience to manifest their full effects when administered in this way. It would certainly be a very convenient and desirable form in which to employ this excellent but offensive remedy, when it cannot be taken by the stomach. To test the excitant and anti-spasmodic power of this medicinal agent in suppository should, I think, claim the attention of medical men, as there are many cases of nervous diseases, hysteria, &c., in which it is so highly useful, and there are some persons to whom it seems to be so peculiarly adapted, that no other remedy can be satisfactorily substituted; and yet the sensitive and fastidious palate of the patient will not tolerate its use. I believe it will be found, when employed in this form, in the *proper* dose, to be almost equally efficient as when given in the usual forms by the stomach. I have experienced upon myself strongly marked excitant effects of the volatile oil, in a very short time after a suppository of the drug had been introduced, and which continued for a considerable length of time. To derive satisfactory results from its employment, however, in this form, it is absolutely necessary that the suppositories should be prepared with care from *pure, fresh tears*, and not from the partially inert drug in powder.

Suppositories of assafœtida are very difficult to prepare, owing to the *resin* of the fresh drug not being miscible with melted butter of cacao. This has proved an almost insuperable obstacle to their successful manufacture. Assafœtida has proved more intractable in my hands than any other substance of which I have attempted to make suppositories. It being utterly impossible by any of the usual means to retain it in intimate mixture with the cacao butter, in the liquid state, long enough to pour into the moulds, the resinous portion would separate and obstinately adhere to the bottom of the vessel, notwithstanding the most careful and varied manipulation.

To remedy this difficulty and source of trouble and annoyance, I instituted a series of experiments, and tried various means, without avail, until it finally occurred to me that if I would saponify the resin and volatile oil with an alkali, that it would promote the solubility of the resin, and render it miscible with the melted fat. I selected liq. potassæ as the most eligible and convenient for the purpose, and employed it in the proportion of one drop to about eight grains of the drug, with complete success.

When *perfectly pure tears* can be procured, they may be thoroughly malaxated in a mortar until perfectly smooth, and the liq. potassæ then dropped in and well incorporated, and the whole afterwards well rubbed with the butter of cacao, and suppositories prepared in the usual manner. But as it is important that suppositories should contain nothing in their composition which would be likely to create irritation, and as assafœtida is so generally contaminated with impurities that it is almost impossible to obtain tears in sufficient quantity, perfectly free from foreign matter, suitable for their preparation, therefore, in order to make their manufacture easy and a perfect success, it is necessary that there should be some means proposed to purify it, and bring it to a suitable condition for the purpose. To accomplish this object, after repeated experiments, the writer has adopted the following plan, which will free the drug from all coarse foreign particles which would be likely to prove objectionable:

℞.	Assafœtidæ, (carefully selected tears,)	℥j.
	Alcohol, sp. gr. ·809,	f℥iv.

Cut the assafœtida into small pieces, and rub it in a mortar until reduced to a *smooth* paste. In cold weather, to facilitate this operation, a few drops of the alcohol may be added, as found necessary; then add the remainder of the menstruum in small portions at a time, with constant rubbing, until a smooth and uniform mixture is attained, which must be strained through muslin into a shallow vessel with a good evaporating surface. Then set it aside in a place favorable to evaporation, and allow it to evaporate spontaneously, with occasional stirring, to about the consistence of *thick* honey. This should be immediately transferred to a tightly covered jar, and labelled "purified assafœtida," and preserved for use. When kept a long time, it should be well stirred with a spatula before being used. When prepared in large quantity, it should be put up in ounce jars, kept in a cool place, and the air excluded as much as possible.

To prepare assafœtida suppositories of medium strength:

℞.	Assafœtidæ purificatæ,	ʒiij.
	Liquoris potassæ,	gttxxij.
	Ol. theobromæ,	ʒv.

Rub the liq. potassæ in a mortar with the purified assafœtida, until well and smoothly mixed, then gradually add the butter of cacao in small portions at a time, and incorporate thoroughly, until about one-half is added; then add the remainder, which may not be so carefully mixed; then proceed to prepare one dozen suppositories in accordance with directions given in the writer's essay upon suppositories, on page 225 in May number of the Journal of Pharmacy. They should be cast in moulds of 35 grs. (cacao butter) capacity.

As thus prepared, *each* of these suppositories contains, when the whole process has been carefully and skilfully managed, the *entire* active properties of *fifteen* grains of assafœtida, and are beautiful and elegant in appearance. Suppositories of almost any desired strength, from one to twenty five or thirty grains, can be made, with the greatest facility, by the above process. The above, however, is about the strength usually prescribed by physicians for adults.

The use of liq. potassæ in the foregoing process I consider entirely unobjectionable, as it is in too minute a quantity to produce the slightest irritation, and being wholly saponified; if not entirely so by the resin and volatile oil, it is by the fatty acids of the butter of cacao. I should think its tendency would be beneficial, rather than otherwise, by increasing the solubility of the resin, and rendering it more easy of absorption; consequently promoting the activity of the drug.

As far as I can learn, druggists generally who have a demand for suppositories of assafœtida are in the habit of preparing them from the powdered drug, to avoid the trouble encountered in using the fresh tears. Powdered assafœtida must be almost, if not entirely inert, when administered in this form, being nearly, if not quite devoid of volatile oil, and the resin in a state unfavorable to absorption.

Mistura Assafœtidæ.—Purified assafœtida, asabove prepared, will be found not only convenient for making suppositories, but also for preparing, extemporaneously, the milk of assafœtida, which can be made of any desired strength, from 15 grains, U. S. P., to 30, 40, or even as much as 120 grains to the fluidounce, with it in a few minutes, with but little labor, compared with the tedious and frequently unsatisfactory process when the crude drug is used.

Enema Assafœtidæ.—Assafœtida, when purified as directed above, is greatly preferable to the tincture ordered in the British formula for this preparation. By its use the objectionable admixture of alcohol is avoided in the preparation. When made with it, about forty-one or forty-two grains should be substituted for the six fluidrachms of the tincture ordered, which represents about the assafœtida strength of the latter. In preparing the enema, the purified assafœtida should be well rubbed up with the mucilage of starch of the formula, or first with a small portion of water, as in making lac assafœtida, and then with the mucilage gradually added, allowing, if thought necessary, for the water added.

Pil. Aloes et Assafœtidæ, and Pil. Galbani Comp.—The purified assafœtida can be substituted with convenience and advantage, for the crude drug, in the officinal formulæ for the preparation of the above pills. It is usually of such consistence that it forms a convenient pill mass with the other ingredients, without the use of any other excipient.

It may be advantageously substituted for the crude drug, also in the preparation of all pills in extemporaneous prescriptions, when the latter is among the ingredients prescribed, provided the ingredients with which it is associated are in a dry or powdered condition. Purified assafœtida in such cases will not only serve as a substitute for the crude drug, but frequently as an excipient.

Philadelphia, August, 1868.

NOTE ON A FALSE JALAP.

By William Procter, Jr.

A few weeks since the writer was called upon by two Mexican gentlemen, in relation to a sample of dried tuberous roots about which they desired information. They stated that the tubers were dug on property belonging to one of them. The manner of its discovery was in this wise: Certain itinerant root gatherers had been operating on these lands without permission, and under the impression that the roots were valuable they were detained. The idea appeared to be that they were jalap tubers, and the object of the visit was really to determine this point. The specimens consisted of half a dozen tubers, several of which were perfect. The largest was six inches long, two wide, and from half an inch to an inch thick. Its shape was almost precisely that of a castor sack, wrinkled and flattened just as castor is often seen. Other tubers were three inches long, and as wide and thick as the large tuber, but varying in shape, which, from the fleshy nature of the root, is modified in drying. The epidermis is exceedingly wrinkled, and has a mottled brown color resembling jalap, varying from light brown to almost black. The odor of the tubers is almost precisely that of true jalap, and very decided, and this character renders it a dangerous adulteration, as it is more difficult to imitate the odor of jalap than any other of its properties. The tubers are not scored with a knife, like jalap often is, to facilitate drying. The interior is spongy in texture, no indications of concentric tissues, as in jalap, and no visible resinous deposit. It is easily impressed with the nail, and has a tolerably uniform light drab-brown color. Desiring to know more of its structure and botanical characters, I submitted a sample to Prof. John M. Maisch for microscopic examination, who kindly makes the following report:

"The surface is composed of suberous layer in about ten rows of cells, the walls of which are partly dark brown and partly brownish-yellow. The parenchyma of the bark, which occupies five to six times the thickness of the former layer, consists of numerous cells stretched tangentially, and is not interspersed with medullary rays. Inside the cambium line we find the parenchyma composed of more regular cells, and containing vessels surrounded by soft ligneous prosenchyma, the bundles showing upon cross section very short, bent, or somewhat irregularly twisted lines, which are scarcely concentrically arranged, and without any distinct or very apparent radiating arrangement. The parenchyma of the bark and body of the tuber contains much starch, but no resin cells, nor have I yet found crystals in either tissue.

"The structure of the tuber is therefore very different from that of the so-called 'jalap stalks,' the tubers of *Ipomœa Orizabensis*, which have a distinctly radiating arrangement of the ligneous bundles. It differs from true jalap in the total absence of the resinous zones and cells; but if these are left out of consideration there is a striking resemblance between this false jalap and the true tuber, as the simultaneous examination of sections of both will show. The false jalap in question has no similarity whatever with the roots and tubers which have been named as occasional adulterations of true jalap, such as Mirabilis jalapa (*Radix metalistæ*), Asclepias, and Bryonia.

"For the above reasons I am of the opinion that the origin of this tuber, which might be called *mealy jalap*, comes from a convolvulaceous plant, probably nearly related to the true jalap plant.

"Some eight years ago a jalap was imported into New York, which, as far as I can remember, agrees in structure with the specimen now before me; but the former cannot at present be examined. I remember, however, that at the time of its importation it was supposed to be true jalap deprived of its resin, whilst an examination made by me, of which I kept no record, showed the absence of resin cells, but a general agreement in structure with true jalap. I am satisfied that the false tuber now shown is not new in our market.

"Yours, truly, JOHN M. MAISCH."

The tubers, from their shrivelled appearance, may have been collected at the wrong season, and, as it is well known in the case of sanguinaria, podophyllum, etc., the proximate constitution of such samples is very much altered from that of the drug collected in the autumn.

One hundred grains of the tuber were reduced by bruising and cutting sufficiently fine to be extracted by alcohol, 95 per cent., to which it yielded 22 per cent. of its weight. The alcoholic extract possessed the jalap odor of the root very decidedly. The tincture affording it had a decided acid reaction, a brown color, and the odor of the root. The alcoholic extract was then treated with ether by repeated malaxations, until it was exhausted. The ethereal tincture of the extract was brown-colored, had a decided acid reaction, and on evaporation afforded two grains of a soft extract, strongly odorous of jalap, with a decided acid reaction. The residue, undissolved by ether, when treated with water was largely dissolved, leaving a brownish pulverulent residue undissolved, weighing two grains, which was soluble in liquor potassæ with heat, and not precipitated by hydrochloric acid. The watery washings of the alcoholic extract, after treatment by ether, were dark brown colored, and contained the larger part of the matter, extracted by alcohol from the root. When boiled with an alkaline solution of oxide of copper, the latter was reduced at once, indicating the presence of glucose. The residue of the tubers, after the alcoholic treatment, when macerated in cold water and then boiled, afforded a decoction charged with starch.

The investigation was not pushed further; sufficient is shown to prove that this false jalap has a different constitution from true jalap in the absence of a large proportion of resin, but that it contains sufficient of the ingredients of jalap to indicate a probable botanical relationship with that tuber.

In regard to the exact locality whence these tubers came, the parties seemed indisposed to speak, except that it was in the northern part of Eastern Mexico; nor did they know anything of the character of the plant.

Philad., *Aug.* 29, 1868.

GLEANINGS FROM GERMAN JOURNALS.

By Prof. John M. Maisch.

Assafœtida.—Ed. Schær has met with assafœtida lumps of the size of a fist to that of a head, consisting almost exclusively of the same white mass found in the tears; the softer crummy mass was reduced to a very small proportion, and the whole was pretty free from earth, sand and fragments of plants. But on close examination stones were found to be imbedded in the white mass, closely resembling the latter in color, and evidently added to the juice before it was hard. The stones, some of which weighed 8 oz., one even 12 oz., consisted mainly of carbonate of lime, containing some magnesia, ferrous oxide and silicic acid, and resembled calcareous spar or dolomite in structure.—(*Schweizerische Wochenschrift f. Pharm.* 1868, 9, 10.)

Iodide of Nitrogen is formed without danger of explosion if the ammonia contains a minute quantity of oil of cloves, (one drop to 2 oz.); the transformation into iodide of ammonium takes place almost instantaneously at a temperature of 15° R. (66°F). Glycerin appears to act in the same way. (*Ibid.*, 28.)

Irish Moss.—Dr. F. A. Flückiger and L. Obermaier found it to contain about 1 per cent. nitrogen and to yield 15·6 per cent.

ashes. The mucilage prepared by digesting the Irish Moss in the steam bath for a day, precipitating the decoction with alcohol and purifiying the precipitate twice from its aqueous solution with alcohol, was a horn-like mass of a light brownish tint, difficult to powder, and contained ·88 per cent. of nitrogen and yielded 15·9 per cent. ashes, containing notable quantities of sulphates. The mucilage readily swells in water and dissolves to a nearly clear liquid without action on litmus; the solution is not precipitated by ferric chloride or silicate of soda, but sugar of lead causes a precipitate, the filtrate from which is not rendered turbid by alcohol. It is not dissolved by cuprammonia, and moistened with sulphuric acid not colored blue by iodine. Boiled with nitric acid, it yields mucic acid. It differs, therefore, essentially from cellulose, starch and gum, but is a true mucilage, nearest related perhaps to the mucilage of marshmallow root.

The agar-agar or tjentjan of the Chinese and Japanese, is the very pure mucilage of Sphærococcus tenax, *Agardh*, and behaves in some respects like the former.—(*Ibid.*, 85–88.)

Spiritus Ætheris Chlorati.—Ed. Schær recommends the following process: 1½ parts powdered bichromate of potassa is mixed with 8 parts common muriatic acid sp. gr. 1·17, and introduced into a retort; 32 parts of alcohol, sp. gr. 837 to 840, are added, with the precaution to prevent its becoming mixed with the acid, in order to avoid the formation of aldehyde and other products of oxidation. A uniform heat is applied by means of a sand- or water-bath, and 28 parts are obtained by distillation, which, if necessary, are rectified over calcined magnesia.—(*Ibid.*, 94.)

Euphorbon.—This name is given by Dr. Flückiger to a constituent of euphorbium, which is related to lactucon. It is soluble in ether, benzin, amylic alcohol, chloroform, acetone and glacial acetic acid. From the solution in the first two solvents it effloresces, on spontaneous evaporation, in feathery needles, from the chloroformic solution containing alcohol in short prisms showing double refraction under the polariscope. It is readily soluble in boiling alcohol, fusible above 106°C (223°F.), indifferent to litmus and unaffected by most acids and alkalies.

If dissolved in concentrated sulphuric acid and the solution spread out upon a porcelain plate, it is colored violet by nitric acid of about the sp. gr. 1·2. Lactucon and colchicin show the same coloration. But the acid solution of the latter diluted with water, assumes a beautiful yellow red color with a violet tinge by potassa, while euphorbon is precipitated from its acid solution by water without change of color. Elementary analysis led to the formula $C_{26}H_{22}O_2$. Johnston's uncrystallizable indifferent resin, which is very readily soluble in cold 75 per cent. alcohol, has the composition $C_{26}H_{22}O_4$. Euphorbium contains about 38 per cent. resin (acrid principle), 22 euphorbon, 18 gum, 12 malates and 10 per cent. inorganic matter.—(*Ibid.*, 94–96.)

Reaction of Oxide of Copper with Guaiac.—Pagenstecher observed, about 30 years ago, that a cupric salt in the presence of hydrocyanic acid imparts a blue color to guaïac resin. Ed. Schær found that a liquid containing $\frac{1}{5000}$ per cent. of sulphate of copper and $\frac{1}{6000}$ per cent. shows the reaction very distinctly, and argues that this is produced through a portion of the oxygen of the cupric oxide present in the modification of ozone, which in the presence of hydrocyanic acid, is induced to react with the resin of guaiac. The reaction with the same resin of binoxide of lead, ferric and mercuric oxide depend likewise upon the presence of active oxygen.—(*Ibid.*, 18 and 19.)

Traces of Ammonia are detected by Bohlig's reagent (mercuric chloride with the addition of carbonate of potassa) or by Nessler's reagent (mercuric iodide dissolved in iodide of potassium with the addition of potassa). Rehsteiner found that the former produces, in 5 minutes, a distinct white turbidity in liquids containing one millionth part of ammonia, while the limits of the latter reagent are $\frac{1}{500000}$, producing in 15 minutes a faint yellow turbidity.—(*Ibid.*, 112).

GLEANINGS CHEMICAL AND PHARMACEUTICAL.

By the Editor.

Vegetable organisms in the human blood.—Dr. Joseph G. Richardson, of Union Springs, N. Y., after numerous examinations of human blood, has arrived at the conclusion that living organisms in decomposing beef tea, when ingested, may enter the circulation and increase there; and bases his belief on experiments made on himself, by microscopical examination of his blood at intervals after taking four ounces of beef liquid which, according to calculation, contained 27,000,000,000 of living organisms. Dr. R. thinks the presumption is strong that other plants besides those noticed by himself, of a more poisonous nature, may thus enter the circulation, "and each constitute the essence, the real *contagium*, of some so-called zymotic disease, as, for example, diphtheria, and scarlet fever, small-pox and measles, as declared long ago by Prof. Salisbury, of Cleveland, and recently by Prof. Hallier, of Jena."—*Amer. Journ. of Med. Sciences*, July, 1868.

Whey as food for infants.—Mr. Geo. S. Dickey, pharmacceutist of San Francisco, in a communication directed to physicians in the Evening Bulletin of that city for July 3d, calls attention, in those cases where young infants cannot have their natural food, to the advantages to be gained by the use of sweet whey, obtained from cows' milk. "By simply warming, adding a small quantity of 'liquid rennet,' and setting aside in a warm place for a while, will separate the casein (curd) from milk. The whey, separated from the curd by straining, is the most nutritious and digestible food for the tender infant, varied by the gradual addition thereto of unchanged milk."

On the comparative action of various disinfecting agents.—Dr. Beranger-Feraud, of the French navy, after trying wood charcoal, chlorine, chloride of lime, carbolic acid, and protosulphate of iron in deodorizing the bilge water of ships, comes to the conclusion that permanganate of potassa far exceeds them all in rapidity of action and thoroughness of effect, and says: "I made use of a solution of permanganate of potash, of the strength of half an ounce of crystals to a quart of water. One ounce and a half of this solution, which has a fine crimson color, added to a pint of foul bilge water, effectually removed all bad odor in three minutes, with a change of color to a dirty grayish-brown.

"The purifying action of permanganate of potassa is so remarkable that its success in the disinfection of putrid matters of every kind may safely be assumed. I have derived the greatest advantage from its use for many other sanitary purposes besides those just mentioned. It not only effectually destroys the foul odors arising from suppurations, and from putrefying and fecal matters, but it acts likewise on many other odorous substances. I will cite a curious fact in confirmation of this. Having one day inadvertently imbued my hands with a concentrated solution of carbolic acid, I could not rid myself of the penetrating and offensive smell. Repeated washings with soap, followed by applications of vinegar, chloride of lime and ammonia, failed to remove the odor. Being on the point of attending a consultation to which I was very reluctant to carry so nasty a smell, I was in despair. The idea occurred to dip my fingers in permanganate solution. The first application caused a notable diminution of the carbolic odor; after the third it had entirely gone."—*Med. Press and Circular*, June 10, 1868.

Purification of tannin.—M. Heintz (*Zeitschrift für Chemie*) purifies commercial tannic acid by dissolving it in water, and agitating it rapidly with ether that has been well purified. The decanted solution is then filtered, the ether evaporated, and the tannin obtained free from odor or evaporation.

Cinchona in Jamaica.—According to the Standard (in *Med. Press and Circ.*, July 22,) we learn that the experiment with the culture of Cinchona in Jamaica is in a fair way of success. Commenced in 1866 there were 800 plants growing in 1867, and at the present time 25000 plants are in vigorous growth. The sites chosen are from 3700 to 5200 feet elevation on the Blue Mountain range, and the whole experiment is under the direction of Mr. Robert Thompson, who believes that this culture will prove to be "highly remunerative."

ON THE RELATION OF PERCENTAGE TO DENSITY IN SOLUTIONS OF CHLORIDE OF ZINC.

By Charles Bullock.

Amount of Fused Chloride of Zinc contained in 100 *parts of solution at different densities.*

The fused chloride was dissolved in distilled water with addition of sufficient hydrochloric acid to dissolve the oxychloride formed.

Mean result of three experiments.

Per Ct.	Sp. Grav.	Per Ct.	Sp. Grav.	Per Ct.	Sp. Grav.	Per Ct.	Sp. Grav.
1	1·0082	2·05	1·0168	3·42	1·0286	7·47	1·0615
1·17	1·0097	2·16	1·0178	3·73	1·0314	8·22	1·0670
1·37	1·0107	2·28	1·0189	4·11	1·0346	9·12	1·0736
1·64	1·0133	2·41	1·0201	4·56	1·0381	10 27	1·0814
1·71	1·0139	2·56	1·0214	5·13	1·0421	11.74	1·0927
1·78	1·0147	2·74	1·0224	5·87	1·0458	13·70	1·1052
1·86	1·0151	2·93	1·0240	6·30	1·0490	16·44	1·1275
1·95	1·0154	3·16	1·0264	6·85	1·0536	20·55	1·1583

Amount of Chloride of Zinc (anhydrous) contained in 100 *parts of solution of different densities.*

A known weight of pure zinc was dissolved in hydrochloric acid, avoiding excess. The solution evaporated to the highest density, given in the table, and diluted from that point.

The densities marked * were found by experiment; the intermediate ones were calculated.

Per Ct.	Sp. Grav.	Per Ct.	Sp. Grav.	Per Ct.	Sp. Grav.	Per Ct.	Sp. Grav.
1	*1·0090	24	1·1939	47	1·3549	70	1·5133
2	*1·0186	25	1·2014	48	1·3615	71	1·5199
3	*1·0273	26	1·2088	49	1·3681	72·8	*1·5264
4	*1·0361	27	1·2163	50	1·3748	73	1·5325
5	*1·0448	28	1·2238	51	1·3814	74	1·5387
6	*1·0535	29	1·2313	52	*1·3881	75	1·5448
7	*1·0611	30·3	*1·2388	53	1·3955	76	1·5509
7·9	*1·0686	31	1·2457	54	1·4030	77	1·5571
9·1	*1·0779	32	1·2527	55	1·4105	78	1·5632
10·1	*1·0860	33	1·2597	56	1 4180	79	1·5694
11	1·0938	34	1·2666	57	1·4255	80	1·5755
12·05	*1·1016	35	1·2736	58	1·4330	81	1·5817
13	1·1094	36	1·2806	59	1·4405	82	1·5878
14	1·1172	37	1·2875	60·6	*1·4480	83	1·5939
15	1·1250	38	1·2945	61	1·4545	84	1·6001
16	1·1328	39	1·3015	62	1·4611	85	1·6062
17	1·1406	40·4	*1·3085	63	1·4676	86	1·6124
18	1·1484	41	1·3151	64	1·4741	87	1·6185
19	1·1562	42	1·3217	65	1·4807	88	1·6246
20·2	*1·1640	43	1·3284	66	1·4872	89	1·6308
21	1·1715	44	1·3350	67	1·4937	90	1.6369
22	1·1789	45	1·3416	68	1·5003	91	*1·6431
23	1·1864	46	1·3483	69	1·5068		

ON THE NEW ACT OF PARLIAMENT RELATIVE TO PHARMACY AND THE SALE OF POISONS.

By the Editor.

During the month of July a bill was before the British Parliament, the object of which was to extend the Pharmacy Act of 1852, and to amend the Act relating to the sale of poisons, and it finally passed both Houses on the 28th of July. Those who have been cognizant of the progress of Pharmacy in England, know that for several years past there has arisen a movement among that class of dispensers who are not members of the Pharmaceutical Society, and who adopt the title of "chemist and druggist," the object of which has been to raise their status, and give them some of the advantages which have accrued to the members of the Society who are publicly known as "Pharmaceutical Chemists." The Journal called "*The Chemist and Druggist,*" edited by Mr. Brough, was instituted to advocate the claims and interests of the former class. By the Act now passed every chemist and druggist throughout England and Scotland who sells poison must be registered. The following is the *first* clause:

"From and after the 31st day of December, 1868, it shall be unlawful for any person to sell, or to keep open shop for retailing, dispensing, or compounding poison, or to assume or use the title of 'chemist and druggist,' or chemist, or pharmaceutist, or dispensing chemist, or druggist in any part of Great Britain, unless such person shall be a pharmaceutical chemist or a chemist and druggist within the meaning of this Act, and be registered under this Act, and conform to such regulations as to the keeping, dispensing and selling of such poisons as may from time to time be prescribed by the Pharmaceutical Society with the consent of the Privy Council."

The 2d clause describes what are deemed poisons by this Act, and declares that hereafter the council of the Pharmaceutical Society may, by resolution, declare any other poisonous substance which it may name in such resolution a poison within the meaning of the Act, with the consent of the Privy Council.

The 3d clause describes who are chemists and druggists within the meaning of the Act.

The 4th clause defines how assistants now existing, who have been dispensing not less than three years and are of full age, may, after passing a modified examination as described, be registered as chemists and druggists under this Act.

Clause 5th describes the manner of registration.

Clause 6th makes the Examiners of the Pharmaceutical Society to be the Examiners under this Act, with the approval of the Privy Council, and said Examiners to give a certificate of competent skill, etc.

Clauses 7, 8, 9, 10, 11, 12, 13 and 14, refer to registration—makes the Registrar of the Pharmaceutical Society the Registrar under this Act, defines his duties under the Act, orders all registrars of deaths in Great Britain to advise said Registrar of the decease of Pharmaceutical Chemists and Chemists and Druggists, that such names may be erased from the register. Evidence of qualification to be given before registration. The Registrar to publish annually in January, a correct register of all Pharmaceutical Chemists and Chemists and Druggists, each in alphabetical order. The 14th clause describes the penalty for falsifying the register or for obtaining registration under false evidence.

Clause 15 protects the titles of those practicing pharmacy under this Act, and prevents the assumption of them by unregistered parties.

Clause 16 reserves the present rights of "Apothecaries" and Veterinary Surgeons to use and sell poisons, nor does it prevent or interfere with patent medicine makers and venders, nor with wholesale dealers in supplying poisons in the ordinary course of wholesale dealing. It distinctly declares that registration under this Act *does not* entitle the registrant to practice medicine or surgery.

Clause 17 is of much importance, and makes it "unlawful to sell any poison, either by wholesale or retail, unless the box, bottle, vessel, wrapper or cover in which such poison is contained, be distinctly labelled with the name of the article, and the word poison, and with the name and address of the seller of the poison ; and it shall be unlawful to sell any poison in schedule A* (or which may hereafter be added thereto), to any person unknown to the seller, unless introduced by some person known to the seller, and on every sale of any such article, the seller shall, before delivery, make or cause to be made an entry in a book to be kept for that purpose, stating the name and address of the purchaser, name and quantity of the article sold, and the purpose for which it is stated by the purchaser to be required, to which entry the signature of the purchaser and of the person, if any, who introduced him shall be affixed, any person or persons selling poison otherwise than is herein provided, shall, upon a summary conviction before two justices of the peace in England, or the sheriff in Scotland, be liable to a penalty not exceeding five pounds for the first offence, and ten pounds for the second or any subsequent offence." A reservation is made in reference to poisons exported wholesale, and to poisons in medicines dispensed, by apothecaries and others legally qualified, in prescriptions, which sales, however, are required to be registered.

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*SCHEDULE A.—Part 1.—Arsenic and its preparations, Prussic acid, cyanide of potassium and all metallic cyanides, strychnia and all poisonous vegetable alkaloids and their salts, aconite and its preparations, emetic tartar, corrosive sublimate, cantharides, savin and its oil, and ergot and its preparations.

Part 2.—Oxalic acid, chloroform, belladonna and its preparations, essential oil of almonds, (unless deprived of its prussic acid), opium and all preparations of opium and poppies.

The remaining clauses, from 18th to 28th inclusive, refer to the new relationship introduced by the Act, between the Pharmaceutical Society and Chemists and Druggists, and defines to what extent the latter can partake of and enter on the privileges of that Society. The Act unfortunately does not exempt the chemist and druggist from jury service, as it does the pharmaceutical chemist.

It should have been remarked that the sale of poisons in part 2d of schedule A are only required to be duly labelled and sold only by qualified persons. On the whole, we think this Act is an advance in the right direction; it opens the way to the permanent union of all the pharmaceutists of England and Scotland, removes the sale of poisons from grocers and other dealers, not registered as druggists, etc., and will require an examination of the next generation of chemists and druggists that will sift out the unqualified. The inconveniences of the sale of poison law will be great and annoying in a country where poisons like bread could be had everywhere, but they will, if carried out, accomplish to a large extent what is aimed at.

The points in the Act which in our view are most satisfactory, are the union of all Pharmaceutists, and the very decided recognition of and confidence in the council of the Pharmaceutical Society as the agent for carrying out the provisions of the bill, especially in reference to poisons.

ON THE CHEMICAL CONSTITUTION OF FLAKE MANNA.

By M. H. Buignet.

The author has made a very elaborate investigation of the constituents of flake-manna, which is published in the June and July numbers of the *Journal de Pharmacie.*

The following are the conclusions arrived at:—

1. Flake manna in its natural state possesses a very energetic rotatory power. This power is dextrogyrate; its value, brought to the plane of polarization of the yellow ray is expressed by $[\acute{a}]j = + 28^\circ 40'$.

2. The rotatory power of manna does not depend on the saccharine matter it contains, because it is found to remain the same after the destruction of all the sugar by fermentation.

3. The substance to which this rotatory power is due is *dextrine,* which has not been before isolated by chemical analysis from manna, and which forms nevertheless one of the principal elements of its composition. It constitutes about one-fifth of flake manna and a much larger proportion of the different species of manna in sorts. It can easily be extracted. It then offers all the physical and chemical characters of pure dextrine.

4. The saccharine matter (besides the mannite) in flake manna consists of a mixture of cane sugar and uncrystallizable sugar. These two sugars are found united in such proportion that they mutually neutralize their opposite optical properties.

5. The different species of manna found in commerce all contain sugar and dextrine. The absolute quantity of these two principles varies considerably one species with another, but their relative proportion is constant and invariable. Thus in various samples of flake manna as well as of the varieties of sorts, there is always found two equivalents of dextrine to one equivalent of sugar.

6. By the nature and proportion of these elements, the mixture of sugar and dextrine in manna resembles the ordinary product of the saccharification of starch. It is therefore probable that it is derived from starch by a natural process, simulating that used in the laboratory by diastase and gentle heating.

ON THE PREPARATION OF SOLUBLE IODIDE OF STARCH

By M. Quesneville.

M. Quesneville, who first introduced iodide of starch into therapeutics, advises the following method of preparing it:

Take of starch of the best quality (free from potato starch) 1050 grammes.
Iodine, in very fine powder (passed through a silk sieve) 100 grammes.

Mix the two powders carefully, and when the mixture is perfect it is to be moistened gradually, agitating without ceasing, with a mixture of 400 grammes of water and 100 grammes of alcohol. The powder gradually deepens in color, and soon becomes a beautiful black; it is left during 15 to 20 days and is afterwards dried in the air, followed by the drying-room heat. The starch, if very dry, should not be used in larger proportion than 900 grammes.

When the powder of iodide of starch is well dried, it has no odor of iodine, and contains exactly one tenth of its weight of iodine. It is completely insoluble in water, and to render it soluble it is sufficient to heat it in an enamelled pan over a very gentle fire, with continual agitation. This operation requires but little time, and the operator is apprized of its completion by the development of a pungent odor. It is well to try from time to time whether the powder has become soluble.

This operation, though easy, requires nevertheless a certain skill and attention, because if heated too strongly the solution is red and has lost iodine.

Iodide of starch powder obtained by this process suffices for the use of Pharmacy; nevertheless, if it is desired to obtain it more pure and extremely soluble in cold water and always of a beautiful violet blue, it is necessary to make a warm concentrated solution of the strength of 7 to 8 degrees of the hydrometer for salts, allowing it to deposit during several days, decant the solution and precipitate by adding only enough of alcohol to precipitate the iodide of starch. Put the magma on a linen cloth, press it as dry as possible and complete the dessication on plates in a drying room and reduce it to powder.—*Journ. de Pharmacie, Juil*, 1868, from *Mon. Sci.*

ON PHOSPHORATED OIL.

By M. C. Méhu.

The author objects to the process of the French Codex, in which almond oil is heated with an excess of phosphorus and the oil decanted from the excess when cold. He finds that, owing to the presence in the oil of certain proximate matters, (as albumen and resin) that the solution alters by keeping, and deposits a reddish matter containing some phosphorus.

To obtain a phosphorated oil absolutely limpid and inalterable he recommends the following process employed for many years at the Necker hospital.

Take a sufficient quantity of limpid oil of sweet almond, heat it in a porcelain capsule during a quarter of an hour at the temperature of 302° Fahr., afterwards during ten minutes at about the temperature of 392° to 482° Fahr. It disengages at first vapor of water, and certain organic matters easily changed are destroyed or volatilized, at the same time that the oil is almost decolorized.

The oil thus heated by standing, deposits the impurities as a light flocculose, which may be separated after standing or at once filtered.

To transform this oil into phosphorated oil, put it into a glass-stoppered flask, well dried; add a fragment of transparent phosphorus one-hundredth part by weight of the oil used, that is to say a grain of phosphorus for every 100 grains of oil. The flask is placed in a water bath and heated to from 176° F. to 194° F., loosening the stopper several times during the heating to permit the expanded air to escape; then remove it from the bath and agitate briskly from time to time until the phosphorus is completely dissolved. The solution is rapid, the color unchanged, and no deposit occurs.

Thus prepared this oil contains one per cent. of phosphorus, whilst the oil of the Codex process contains 1·2 per cent. It is phosphorescent in the dark and emits abundant white vapors in the air. When diluted with four times its bulk of oil of almonds it ceases to be phosphorescent in the dark and to emit vapors. The phosphorescent quality and power of emitting vapors is instantly stopped by a few drops of ether, and also by sulphuret of carbon and oil of turpentine; the oils of thyme, rosemary, cajeput, and mint, and alcohol possess this power in but a small degree, whilst bromine, bromide of ethylen, acetic ether, chloroform, the oils of chamomile, cloves, and champhor do not act in an appreciable degree.

The action of ether is best shown by opening a bottle of phosphorated oil in the dark, and then bringing an open bottle of ether near its mouth, so that the dense ether vapor will precipitate itself into the oil bottle, when the phosphorescence ceases at once.

The author recommends the addition of four per cent. of ether to the oil to prevent this phosphorescence.

The author also recommends his process with butter of cacao so as to obtain a solid phosphorated oil to be taken in capsular form.—*Jour. de Pharm., Juillet*, 1868.

NOTE ON METALLIC BISMUTH, AND LIQUOR BISMUTHI ET AMMONIÆ CITRATIS.

By Dr. Redwood.

The vicissitudes which have attended the commerce of bismuth for several years past have produced an unfavorable influence on the condition, in regard to purity, of some of the preparations of bismuth which are used in medicine. The price of the metal has undergone great fluctuations, ranging from 2*s.* 6*d.* to more than 20*s.* a pound; and, although the highest prices to which it has thus attained have been unprecedented in its previous history, the proportion of impure bismuth in the market has, at the same time, been unusually large. This unsatisfactory state of things appears to have arisen from a falling off in the supply of bismuth from those localities whence the best samples have been obtained, while new sources of supply, especially the Australian, have yielded the metal in a state in which its purification has been attended with considerable difficulty. Of the impurities most commonly occurring, arsenic, lead, copper and silver are the most important. The bismuth may be freed from the first two of these, if present, with comparative ease, by a simple metallurgical operation which consists in fusing it with nitre, as directed in the Pharmacopœia. This is the process usually adopted, and which answers best for removing the more oxidizable metals. It may be conveniently and successfully applied to quantities of the metal varying from four ounces to a pound by means of a gas furnace. The process, however, is insufficient for the removal of copper and silver; and it is with reference especially to the former of these that the principal difficulty is experienced in purifying some of the crude bismuth and bismuth ores of commerce. At the present time large quantities of Australian ore, rich in copper, are waiting the discovery of a method by which the bismuth it contains may be economically separated in a state of sufficient purity to admit of its being used for pharmaceutical purposes. When this question has been satisfactorily solved, there is every reason to believe that a great reduction in the price of the metal will take place. In the meantime we shall have much impure bismuth, containing copper, which, although applicable for one of the purposes for which bismuth is required, —namely, the preparation of fusible metal,—is not well suited for the production of the compounds of bismuth used in medicine. Already the attention of metallurgists has been directed to the importance of providing a supply of purified bismuth for pharmaceutists, and I am assured by houses extensively engaged in this branch of metallurgy that bismuth, free from arsenic, copper, or any material impurity, may now be obtained by those who are willing to pay the price for it.* As this purified bismuth is prepared by men accustomed to such operations from the ores which yield it most readily, it will be found the most economical and best course for those who require pure bismuth to buy the metal in the purified state, or otherwise it will be necessary, in applying the process of the Pharmacopœia, to use crude bismuth which is free from copper and silver.

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* I have recently purchased such at 20*s.* a pound, the price of crude bismuth being at the same time 18*s.* a pound.

With reference to *Liquor Bismuthi et Ammoniæ Citratis*, on which there has been some correspondence in this Journal, it may be stated that, if the conditions specified in the Pharmacopœia be fulfilled, that is to say, if the bismuth employed has been purified in the manner described, and if the purified metal, and also the solution prepared from it, answer to the tests as given, the latter will be free from *arsenic, lead, copper and silver*. These are the impurities most likely to occur, and to the removal or detection of which the process of purification and the tests of the Pharmacopœia are directed; but if it were the object of a manufacturer to introduce other impurities which would elude detection by the tests as given, it would no doubt be possible to do so. I have recently met with two instances of such adulteration in subnitrate of bismuth, an account of which will be found in the following article.—*Lond. Pharm. Journ.*, August, 1868.

NOTE ON A NEW ADULTERATION OF SUBNITRATE OF BISMUTH.

By Dr. Redwood.

I have recently had occasion to examine two samples of subnitrate of bismuth, which have proved to be adulterated to a great extent, by the admixture of a substance which none of the tests usually applied would detect. These samples were sent for examination by wholesale druggists who had been led to suspect that they were not genuine; but who were greatly surprised to learn the extent and nature of the adulteration.

The first of the samples was sent me last May. It presented the usual appearance of the variety of subnitrate of bismuth generally met with in commerce in the form of powder, without any crystalline character. It dissolved in nitric acid with a slight evolution of carbonic acid gas, and this had caused it to be condemned as impure, by a customer to whom it had been sent. The quantity of carbonate present in it was, however, extremely small. In other respects it answered to the Pharmacopœia tests, excepting that the solution in nitric acid gave a precipitate with nitrate of silver, indicating the presence of oxychloride. This is so frequently met with in commercial subnitrate of bismuth that its detection would not have excited much surprise. Its presence is excused by manufacturers on the ground of its making the powder more suitable for some of the purposes to which it is applied, so that for such purposes the powder would be unsaleable if it did not contain any chloride. The chlorine having been estimated, and the equivalent quantity of oxychloride calculated therefrom, a further examination rendered it evident that there was something else present besides subnitrate of bismuth. The residue left, after calcination, was in excess of that which theory indicated; and this residue dissolved in nitric acid, mixed with dilute acetic acid, and precipitated with sulphuretted hydrogen, gave an amount of sulphide much below the theoretical quantity. The cause of these discrepancies was found in the filtrate, which yielded an abundant precipitate of phosphate of lime.

While I was engaged in this investigation, my attention was directed to a paper in the "Journal de Pharmacie et de Chimie" for last March, by Mr. Roussin, in which he alludes to the adulteration of subnitrate of bismuth with phosphate of lime, and describes a very simple method of detecting it. Mr. Roussin says that in one case he found as much as 28 per cent. of phosphate of lime in a sample which presented the usual appearance, and answered to the ordinary tests of subnitrate of bismuth. His process for its detection and estimation is as follows: Dissolve equal quantities of the subnitrate and of tartaric acid in nitric acid slightly diluted with water, and add to this a strong solution of carbonate of potash until all effervescence has ceased, and the liquid is rendered strongly alkaline. "If the subnitrate of bismuth be pure the liquid will be clear, and will remain so even after it has been boiled; but if the sample of subnitrate submitted to the test should contain phosphate of lime, even to the extent of 1 or 2 per cent., this will form a white precipitate, which will not dissolve with long-continued boiling."

In applying this test, it is important to observe that the phosphate of lime, even when present in large quantity, is not precipitated in the first instance after the addition of the carbonate of potash, but its precipitation is immediately effected by boiling the solution. From the sample to which I have already referred, I obtained in this way 11 per cent. of phosphate of lime; and from another sample, which came from a different source, I have more recently obtained no less than 40 per cent. of the same adulterant.

I have reason to believe that both these samples were of foreign manufacture.—*Lond. Pharm. Journ.*, August, 1868.

ON NITRATE OF AMMONIA AND NITROUS OXIDE.

[From White's Dental Materia Medica, Phila., 1868.]

Nitrous oxide for anæsthetical purposes has come into such general use, that information is constantly asked in reference to its properties; the materials used in its manufacture; the process of generating it; how to determine the purity of the nitrate, and of the gas when made, etc.

As found in commerce, nitrate of ammonia is crystallized, granulated, and fused. The fused salt is made by melting down the crystals, and allowing them to solidify into a compact mass on cooling. The granulated is made by evaporating the solution to such a density that it would solidify on cooling, then reducing the heat and stirring the mass until it cools.

The three varieties are all more or less deliquescent, and should be kept in a dry place, excluded from the air.

The fused is generally preferred, because the amount of gas given off by equal weight of the three varieties is somewhat in favor of the fused and granulated, and the latter is objected to by some on account of its greater liability to absorb moisture and gain weight by exposure to the air. If pure, when heated on platinum foil the nitrate should volatilize completely. A residue of any considerable amount would indicate the presence of some non-volatile salt—probably nitrate of potash or soda. A solution of nitrate of ammonia should not afford a precipitate on addition of a few drops of chloride of barium, which would indicate sulphuric acid; nor on the addition of a few drops of a solution of nitrate of silver, which would indicate the presence of chlorine.

Sulphates and chlorides are almost always present in commercial nitrate of ammonia; but if the solution is rendered only turbid, without affording an immediate precipitate with the above reagents, it is sufficiently pure.

The various effects of increasing heat upon nitrate of ammonia are shown by the following table:

At 226° F. fuses perfectly.
At 302° F. emits white fumes, condensing in drops.
At 347° F. effervesces slightly.
At 356° F. boils without decomposition.
At 437° F. effervesces rapidly.
At 460° F. begins to evolve gas.
At 482° F. evolves gas in abundance.
Above 500° F. *nitric oxide* is given off.

To determine the temperature, thermometers have been prepared which may be passed through the cork and into the retort, marking the following degrees: 226°, 356°, 460°, 482°, 500° F.

To obtain the largest amount of gas, the nitrate should first be melted in the retort at a temperature just sufficient (226° to 250° F.) When melted, the heat may be at once carried up to the point of decomposition, 460° F. If a gradually increasing heat is used after the salt is melted, a portion of it will sublime unchanged until the temperature reaches 460° F. The heat should never be allowed to rise above 482° F., for beyond that noxious products are generated. After the gas has begun to come over briskly, the appearance of copious white fumes in the retort is an indication that the heat is too great. The nearer the heat can be kept at the point necessary to generate nitrous oxide, the purer will be the gas.

After the decomposition has fairly commenced, the heat must be lowered rather than increased, as by that time the sand, retort, and the salt itself have accumulated enough heat to carry on the generation of gas for some time, even if the flame were entirely withdrawn.

A sand-bath should always be used to protect the retort from the direct heat, which may be supplied by means of a suitable gas-burner, or by an alcohol or kerosene lamp.

The retort must be of glass; no other practical material has yet been found to answer the purpose. The retort is usually sold with a ground-glass stopper; but owing to the variations of temperature to which the retort is subjected, it causes trouble by being too loose at times, and difficult of removal at others. A good cork is to be preferred. These retorts are made of various shapes; that which seems to have given entire satisfaction is illustrated in the cut accompanying this article (page 412.)

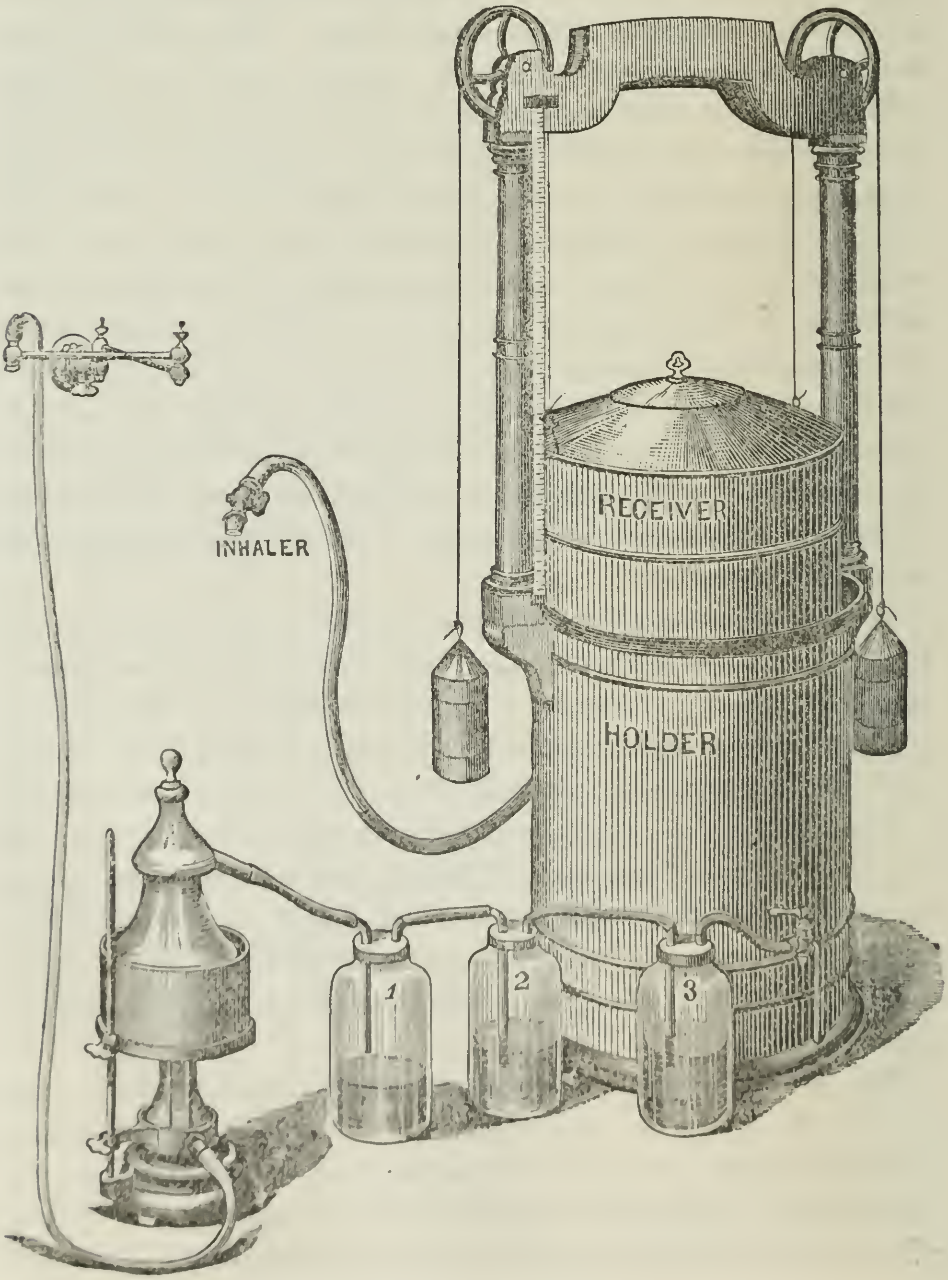
The solutions recommended for washing the gas—caustic potash and copperas—are intended to neutralize any noxious products caused by the use of impure nitrate of ammonia, or by an excess of heat in the process. The caustic potash solution neutralizes any free nitric acid which may distill over. The copperas solution destroys either chlorine or nitric oxide—binoxide of nitrogen. The sulphuric acid is added to the copperas solution to prevent precipitation and insure a clear solution. After having passed through these solutions, it should not be inhaled immediately, but allowed to remain for two or three hours in the receiver over the water. It can then be tested by breathing it, and if it has not a coppery taste, and does not produce a hot sensation in the lungs, it may be relied upon as pure; but if it cannot be breathed pleasantly, it should be allowed to remain in the gasometer until it can. When pure it possesses a very slight odor and a sweetish taste. It improves by age, and in a gasometer, such as is illustrated on a subsequent page, may be kept for many weeks; for although water takes up from 5- to 8-10ths of its own bulk of the gas, after it is once saturated it will not take up any more, except as the water will gradually give out the gas and take up air through the surface exposed between the holder and receiver. It has been suggested that, if this surface were covered with a thin film of oil, this process would be entirely prevented, and gas thus protected has been said to have been retained in the gasometer for a month.

The mouth-piece or inhaler should be constructed with a double valve, preventing the exhalations from the lungs from being thrown back into the gasometer or bag from which the gas is administered.

Some operators have the gasometer placed in the cellar or in a room adjoining the office, and connect with it by a rubber tubing passing through the floor or partition, thus allowing the patient to inhale directly from the gasometer. Others prefer taking the gas from the gasometer as it is wanted, in an India-rubber bag, from which it is administered. It is only necessary, when the bag is to be filled, to connect it by tubing with the supply-cock of the gasometer, and by a little downward pressure on the receiver the gas will be forced into the bag. The capacity of the bag should not be less than eight gallons, although when breathed in and out, as some operators administer it, six gallons or less will generally produce anæsthesia. This effect usually occurs in from thirty seconds to a minute and a half; insensibility to pain is oftentimes reached before the patient is entirely unconscious. Anæsthesia is generally, although not invariably, manifested by snoring, but it is not always necessary to carry the effect to this point; and, notwithstanding the assurances to the contrary, there are many who do not believe that profound anæsthesia, produced by any agent, is entirely free from danger. At all events, it is the dictate of prudence to proceed no further than is absolutely indispensable. It is customary to hold the nose of the patient so that no atmospheric air is mixed with the gas inhaled; but this practice is energetically opposed by some, who assert that an admixture of air is positively necessary to the safety of the patient.

It is administered by some practitioners to every patient who presents, without regard to the state of the health; but there is reason to believe that caution should be observed in this direction, and that it should not be given to those having heart disease, who are predisposed to apoplexy, or whose lungs are seriously affected, nor, as a rule, in any case where there is serious disturbance of vital functions. The unconscious state usually continues from a half to one minute, and in two to three minutes almost all return to a perfectly normal condition. If the operation is protracted, more gas can be given when sensibility to pain returns.

Dr. Geo. J. Ziegler, who has carefully investigated the properties of this agent, claims that "nitrous oxide is very efficient as a restorative. It may be administered either in its gaseous state by the lungs, or in conjunction with liquids by the alimentary canal. It should be given gradually in moderate quantities, so as not to generate too much carbonic acid. Both it and oxygen are of primary importance in asphyxia. In chemical character and physiological influence they are the direct opposites and natural antidotes to narcotizing agents and asphyxiated conditions. They should always be employed whenever practicable, as either alone or in combination with heat they will often save life, even in apparently hopeless cases."



Directions for setting up.

Place the holder in a level position, and fill it with water to within an inch or two of the lower edge of the taper rim.

A piece of lime the size of an egg will help to keep the water pure.

Now open all the spigots, especially the one in the top of the receiver, and gently sink it into the water; then close the spigot in the top of the receiver and that on the upper edge of the holder, and arrange the weights that are attached to the receiver.

Put into the first jar (No. 1) about a pint of water. Into the second jar (No. 2) such an amount of water that the long pipe attached to the lid shall dip about one inch below its level; then add a half teaspoonful of sulphuric acid (oil of vitriol) and about a quarter pound sulphate of iron (copperas). Into the third jar (No. 3) put a like quantity of water, and add a couple of sticks of caustic potash.

Arrange the jars in line and connect them by tubing, as shown in the cut. The tube from the retort must connect with the LONG pipe of jar No. 1, and so on. When properly arranged, a current of air blown into the tube intended to connect with the retort will cause the water to bubble in jars Nos. 2 and 3, and if the spigot to which No. 3 is attached be open, the receiver will begin to rise.

Put into the retort the quantity of [nitrate of] ammonia intended to be used (1 lb. will make about 30 gallons of gas).

Place the sand-dish upon the stove, with sand sufficient to protect the retort. Connect the long pipe of the first jar to the retort by rubber tubing, so that the condensed steam may run into it.

Now apply the heat gradually, and watch the process, being careful not to overheat the ammonia [salt].

The heat should be shut off before the [nitrate of] ammonia is quite all decomposed, in order to avoid breaking the retort; and before the gas has quite ceased to come over, *the retort should be disconnected from the first jar*, and the receiving spigot closed. This is an essential point, for if not attended to promptly, and the atmospheric pressure thus equalized, the solutions will be forced from one jar to another and into the retort, in consequence of the partial vacuum created by the withdrawal of the heat.

It will be understood that the first jar is merely to receive the drip; the use of the water is simply to keep the jar cool, and the tendency to become overheated may be obviated by setting it in a vessel of cold water. Fresh water may be substituted at each operation.

The solution of copperas should be renewed when it loses its green color, and the potash solution when it loses its alkalinity, as shown by its not turning red test-paper blue.

The inhaling tube is attached to the top spigot of the holder.

The register indicates the number of gallons of gas in the holder, as well as the quantity inhaled.

If by accident water should get into the pipe by which the gas enters the receiver, it can be drawn off by the little screw-plug at the bottom of the holder.

EFFECTS OF LIGHTNING.

M. Becquerel related to the Academy the fact that during the violent storm of June 21, a workman who was at some distance from the point struck by the lightning, underwent a violent shock, from the effects of which he did not recover for two days. All the nails were torn out from the sole of one of his boots, which M. Becquerel exhibited as a proof of the occurrence. Several academicians cited similar facts, and, among others, M. E. de Beaumont an instance of where the nails were torn out from the butt-ends of muskets. M. Morin also alluded to a pile of balls placed near a powder depot that was overturned two successive days during two storms which destroyed the lightning conductor. Marshall Vaillant also mentioned the case of a man struck by lightning, one of whose shoes, picked up at a great distance, was found to have had all its nails drawn.—*Med. Times and Gaz., July* 11, 1868, in *Medical News.*

LIQUID NITROUS OXIDE GAS.

Nitrous oxide gas for anæsthetic purposes has been obtained in a new form. Dr. Evans, of Paris, who was one of the first experimenters with the gas, has brought over nitrous oxide liquefied by the combined agency of compression and cold. The liquid nitrous oxide is contained in an hermetically sealed vessel, in shape something like a small cannon, made of gun metal. On turning a tap the fluid escapes, and immediately volatilizes with intense cold. For anæsthetic purposes it may be conveniently received in a "Clover's bag." The gas thus liberated has been administered by Mr. Clover in four dental cases, and in a case of strabismus operated on by Mr. Haynes Walton. Mr. Clover informs us that he still retains his confidence in the safety of this agent. He has now given it in two hundred and fifty cases without the slightest misadventure, and he has no reason to regard it as specially dangerous.—*Med. Times and Gaz. July* 11, 1868, in *Medical News.*

WELL'S PROCESS FOR COPPER-PLATING IRON.

This process yields a coating of copper of great brightness and strong cohesion. The object, whether of cast or wrought iron, is freed from rust by immersion for from five to ten minutes in dilute muriatic acid (2 in 100 water) and subsequent scrubbing for a quarter hour with a wire brush and sand, then washing in water until all traces of acid are removed. It is then covered with zinc-wire in spiral turns of about six inches from each other, which also serves as a means of suspension. The bath consists of a solution of caustic soda (8 p. c.) of which 11 quarts are mixed with 50 ounces of Rochelle salts and 12½ of blue vitriol, making a liquid of a density equal to 19° Beaumé. It retains its activity as long as the copper is kept replaced, and deposition from it proceeds with great regularity. The material of the vessel is best when made of wood, lined with gutta percha and covered with a wooden lid.

When the coating is of sufficient thickness, the object is removed from the bath, first washed with water slightly acidified with sulphuric acid, and then with pure water until the disappearance of all traces of acid; after this it passes into a drying room heated to 132° F. The bronzing, when required, is obtained by a bath of sulphide of sodium, or by means of the same bath as above, somewhat modified, that is, by increasing the proportion of copper to a threefold, in which case the bath no longer deposits copper, but, to all appearances, bronze.

By reducing the points of contact between the iron and wire, though retaining the spiral turns at uniform distances, the deposit gradually assumes a number of colors in the following series, viz.: *orange*, *silver-white*, *pale yellow*, *golden yellow*, *carmine*, *green*, *brown*, and *dark bronze*.

As soon as the desired color is attained, the object is washed in warm water, and again dried at 132° F. Between each subsequent change of color is an interval of about five minutes. The reaction is more decided when the alkaline reaction of the bath is stronger.

For in-door work or ornaments the time of immersion may vary from 3 to 72 hours; for out-door objects a much longer time would be necessary, as many as three to four weeks in some cases. To avoid the tediousness of this operation, the immersion in the alkaline bath is only continued for 12 to 18 hours, but after washing in warm water the coated objects are then placed for 12 or 24 hours in an ordinary solution of blue vitriol, which will increase the deposit quite as uniformly, but much more rapidly. In this manner a coating up to one-fifth millimetre in depth may be formed, which is sufficient for out-door work, and even exposure to water.—*Kuhnheim*, *Druggists' Circular*, Aug., 1868, from *Dingler's Journal*, vol. 188, p. 286.

A NEW METHOD FOR GILDING COPPER WIRE

Has been invented by Mr. Hélouis (36 rue Meslay, Paris) by which the blackening so common with ordinary gilding is prevented. It is partly the same plan as that by which platinum or gold-wire of extreme tenuity has been made, *i. e.*, by enclosing these metals within a cylinder of silver or copper, and drawing them out together to a fine degree of fineness, when on treatment of the wire with dilute nitric acid, the outer coating is dissolved, leaving a continuous thread of the metal not affected by the acid. In the present case, however, the purpose is to coat the copper-wire with a thin film of platinum, upon which gold may then be deposited without danger of its subsequent blackening, as generally happens when deposited upon copper or even silver, and the object is accomplished by enclosing the cylinder of copper in a heated ring of platinum, which latter, on cooling, contracts and firmly attaches itself to the inner cone; then the drawing-out process proceeds as usual, the resulting copper-wire being coated uniformly with a thin layer of platinum, upon which the gold may be readily and permanently deposited. This process is also more profitable, because the scraps, etc., of wire, which accumulate in working it, are valuable enough to be collected for the purpose of recovering the precious metals. *Druggists' Circular*, Aug., 1868, from *Dingler's Journal*, June, 1868.

ON THE GATHERING AND CURING OF CARRAGEEN IN MASSACHUSETTS.

BY G. HUBERT BATES, Scituate, Mass.

Sub-order: Rhodospermeæ, family Spongiocarpeæ.—*Harvey.* The generic name, Chondrus, is characteristic of the substance of the frond, being derived from the Greek word signifying cartilage.

Habitat: Rocks in the sea. Perennial; spring. Root: a disk throwing tufts of many fronds, which are from two to twelve inches high, very narrow and subcylindrical at base, but immediately becoming flat, generally dilating from the base till it becomes three or four lines wide, and then dividing repeatedly and dichotomously (by pairs), each division spreading, becoming narrower than the preceding one, and taking place at shorter intervals. The summits are bifid, the segments varying greatly in length, rounded or acute, straight or curved, and often twisted in such a manner as to give the curled appearance denoted by the specific name, crispus. "Fructification roundish or roundish-oval, sub-hemispherical capsules imbedded in the disk of the frond, prominent on one side and producing a concavity on the other, containing a mass of minute, roundish, red seeds." Its color is a deep purple-brown, often tinged with purplish red, paler at the summit, and becoming greenish and at length yellowish-white, as the season advances.

This is the proteus of marine algæ. The varieties are innumerable, and pass into one another so insensibly that it is almost impossible to define them. There is great range in regard to the width of the frond. Whenever the plant grows more or less exposed to fresh water, a still greater change is wrought in its appearance. The main divisions are much broader, fewer, and exceedingly irregular, while the margin and extremity are beset with such a vast number of small segments that the whole suggests the idea of monstrosity. In such specimens the frond, when held between the eye and the light, is thinner, more transparent, and frequently mottled with green. It occasionally happens that the margin is somewhat raised, so as to render the frond slightly channelled, but seldom so much as to allow of its being mistaken for *C. mammilosus.* The pink seeds are very conspicuous when held between the eye and light. When fully ripe, the capsules fall away entirely, and leave the frond full of holes. Greeville concludes his admirable description—parts of which are included in the above—by remarking that "it is difficult, in words, to convey any idea of the variableness of this species."

The varied uses of carrageen in manufactures make it an article of considerable importance; and the present high prices of glue and isinglass, for which it is an excellent substitute, have created a demand for it heretofore unknown. Up to about the year 1848 all the carrageen consumed in this country was imported from Ireland, which gave it the popular name of Irish moss. It was collected on the southern and western shores of that island, and was converted into size for house painters, and also esteemed for medicinal and culinary purposes. That imported to America was used in making custards and *blanc-mange*, and sometimes sold as high as seventy-five cents per pound, retail. In 1849 several parties commenced making a business of gathering and curing *Chondrus crispus* at Scituate, Plymouth county, Massachusetts, and produced the first considerable quantity of the domestic article ever sold in Boston. This is still the only point in the States where any noticeable amount is collected, the business having lately been largely increased, until the annual crop is not far from 500,000 pounds—equal to about 6,000 barrels.

Its range.—Some sea-weeds are cosmopolitan, and are equally abundant in all latitudes; but generally algæ are more or less local in their distribution, and different marine floras are found in the different parts of the ocean. The degree of exposure to light, and the greater or less motion of the sea, have an important effect. The green algæ occur either in the shallower parts of the sea or in fresh water; the olive color is characteristic of those sea-weeds that abound between the tide-marks; while the red-colored species grow in the deeper and darker parts of the ocean.

The sub-order Rhodospermeæ, in which Harvey classes the *Chondrus crispus*, seem to flourish in the temperate zone, while Chlorospermeæ increase as we pass northward, and Melanospermeæ towards the tropics. But while *Chondrus crispus* appears, under certain conditions, to abound in the temperate zone, it is generally incrusted with various minute mollusca, that causes its rejection by the dealers. The rocks on the shores of Scituate, in the main, undoubtedly produce the best article yet discovered in this country. But there are ledges here, where the muscle attaches to the plant, that are wholly abandoned by the mossers. Indeed, the range of the clean-growing Chondrus seems to be very limited.

It has been remarked by those who have visited Cape Ann and the eastern shore for the purpose of testing the quality of the moss growing there, that the product of those parts is of a coarse and limy character. Perhaps, however, this moss, in some instances, may be susceptible of improvement. The old plant should first be entirely removed, which would be immediately succeeded by a new growth; and if this exhibits a marked superiority over the old plants much may be expected of the ledge, for each successive "pull" will produce an improvement in the moss. That the abundant moss growing to the eastward has not been fairly subjected to this test, and the improved article brought into market, indicates either a want of knowledge of the necessary process of improving, or the absence of those whose habits would naturally lead them to engage in the business; or it may be that the plant in that quarter is not susceptible of any improvement, as the report goes.

As regards perpendicular direction, Forbes remarks that one great marine belt or zone lies between high and low-water marks, and varies in species according to the kind of coast, but exhibits similar phenomena throughout the northern hemisphere. This is denominated the littoral zone, and necessarily varies according to the rise and fall of the tides. If I am right in my identification, the *Fucus canaliculatus* forms the upper sub-region of this zone, followed by a broad belt of *F. nodosus* and, perhaps, *F. versiculosus* and *F. serratus*. This is succeeded by a narrow belt of *Chondrus crispus*, interspersed with *Rhodomenia palmata* and *Laminaria saccharina*, which is exposed only at low ebbs. The *Chondrus crispus*, however, extends some distance below low-water mark in to the laminarian zone, its fronds increasing in width as the water becomes deeper. The laminarian zone extends to a depth of from seven to fifteen fathoms. Here the great sea tangle, *Laminaria digitata*—improperly called kelp—abounds.

Gathering and curing.—The mossers begin the "pull" of moss late on the spring tide of the full moon of May. This is earlier than it should be, for moss, like the grass in our pastures, attains but a feeble growth in the month of May. This prematurely-gathered moss suffers a great loss by shrinkage, and cannot be made to "hold its color" when bleached. This practice is probably owing to the restlessness of those mossers who, having no gardens to plant, or but small ones, become weary of the idleness of winter, and are anxious to resume their customary labor.

Before any moss is pulled, however, the "bleaching beds" are carefully prepared. For these, sandy portions of the beach near the creeks are selected. The stones thrown upon the old beds by the action of the sea are raked off into something like windrows, which divide the plats. The contents of the shanties are overhauled. Hand-barrows, pulling-rakes, turning-rakes, and washing-tubs are put in order or replaced with new articles. The boats receive careful inspection. A coat of paint or an application of tar is, perhaps, the result. These boats are frequently loaded to the water's edge, and, when the supply of the more adjacent ledges is exhausted, often perform trips of several miles with such a freight. A leaky boat would be unpleasant—not to say dangerous. The "navigation" is, however, generally very safe, notwithstanding it is over ledges of rocks that are known to all mariners as extremely dangerous to shipping.

The Chondrus-bearing ledges are all within a few miles of the celebrated Minot Ledge light-house. Seven shipwrecks have been counted at one time on this shore, all in plain view. The light-tower rises ninety feet from a submerged rock, but at this writing the sea breaks against it so high that at times it is entirely hidden from sight! Yet in a few months scores of men will be moving about among these rocks, gathering a crop that hardly one in a thousand in the States knows anything about!

The tools of the moss gatherers are few and simple. The pulling-rake is the most important. It is a long-handled rake, with long, flat, iron teeth set closely together. The tub is a half hogshead; the turning-rake, a common hay-rake; while the boats vary considerably, but are good in a sea-way, especially when handled by experienced men.

The spring tides are selected for pulling, because the tide ebbs out lower than at common or neap tides. Spring tides occur at every new and full moon, when it is always high water a little before twelve o'clock; so the pulling comes at morning or evening, or both. The spring tides also expose a superior and cleaner variety of the plant, which is "hand-pulled" and carefully cured. Apothecaries buy this, and in the form of delicate blanc-mange it finds a welcome at the table and at the couch of the invalid.

The period of the spring tides is an exciting time with the mossers. The song of the boatman as he rows, the merry laugh and frolic of the boys, indicate that harvest time with them has come, and that before the husbandman has sown his corn! It is not intended to intimate, however, that moss-raking is as pleasant as raking red-top and clover. On the contrary, many tough farmer boys, after wading and pulling moss among the rocks on a cold morning in May, would doubtless abandon the business in disgust. A nervous man would hardly like it. There is a certain animal that roams among the rocks around, with such powerful pincers as to inspire a constant solicitude for the extremities, and woe to the luckless wight who comes in contact with them. Over a hundred thousand lobsters are taken annually by the fishermen of Scituate.

At the earliest dawn the boats are launched and rowed to the rocks, where the best quality may be found. If it is a very low ebb, the boat is forced as far among the rocks toward the shore as it will float, and the "hand-pulling" is vigorously commenced. The gatherers are not confined to the rocks immediately adjacent to the grounded boats. These exhausted, they wade to others and pick into baskets. Great care is constantly exercised to get good, clean moss, free from minute shells and tape-grass, for upon this the mosser reckons his price per pound. This pull also receives particular attention in bleaching and packing, and finally fetches two or three times as much as the common kinds.

As the tides in ebbing finally cease to expose the belt of rocks that produce the favorite variety, the marine farmer repairs with boat and rake to the outer Chondrus-bearing rocks, whose abundant crops wave and surge with the swell. Here the iron teeth do great service, coming up filled with a variety that contributes largely to the wants of the brewer and the cloth manufacturer. This moss is never so free from a living coating as the hand-pulled, and is mixed at first with tape-grass (*Vallisneria spiralis*) and other foreign substances. If he be an honest mosser you will, nevertheless, get a good article. Some men can scarcely fail to make good carrageen of any gather, and they should be encouraged. Messrs. Howe & French, of Boston, are doing more in this direction than any other dealers.

The advancing tide or a laden boat compels a return to the shore. The boat is shot upon the beach, and the hand-barrows come into use. Two men soon carry away the load to the top of the beach, where it is spread on the bleaching-beds to dry. The remaining process any good housewife of the olden time well understands. Like the linen at the spring, it must be alternately wet and dried until the proper degree of whiteness is attained.

The washing is done in the tubs on the banks of the creeks which intersect the marshes and often approach the beach. Salt water alone can be used, as the moss is very soluble in fresh. The tubs are quickly filled with a "long-handled" bucket, which must be an Irish invention, taking rank with the long-handled shovel. It is, albeit, a very expeditious method of filling half a dozen half hogsheads. In the "wash" the moss is well rinsed, and all floating pieces of tape-grass picked off. The water is then allowed to drain off, provided there be any unabsorbed, and the tub thrown on to its chine and dexterously rolled back to the beds. The spreading is repeated, and presently the whole is turned with a rake, the curer, if he be a careful one, still picking out the poor pieces. The mosser gives a great deal of attention to the bleaching, which, in fine weather, is accomplished in about six washings. At low tide he still continues the pull with the boat and rake.

When the beds are covered with moss the heavens are as anxiously scanned as ever in hay time, and on the approach of rain a bustle is incident that is only equalled by that of the haymaker. The moss, if dry, is snugly cocked up like hay, and covered with canvas. If the bad weather continues some time, it is as fatal to the carrageen as to the hay, and is bound to turn out a damaged article, if circumstances are not the most favorable. If exposed to a long rain it rapidly dissolves.

At the spring tides the beds are generally covered with the freshly gathered moss, looking black and uninviting; but as the bleaching advances, the peats first appear to turn to a delicate red color, and finally assume a yellowish whiteness that is very pleasing to the eye. When the carrageen is properly cured it is stored in bulk in the shanties. As leisure comes, it begins to find its way into barrels. This is a time of temptation. A barrel of well-cured and honestly packed moss should certainly never exceed a hundred pounds, and the average weight should be less than that. They frequently are made to weigh one hundred and twenty-five pounds. Specimens of our beach sand have doubtless been admired wherever Irish moss has found a consumer. Sometimes the moss *gathers dampness* at packing time, which is the more singular, as the weather is generally dry.

The careful mosser still picks over, and sorts as he picks, and his moss is now a white, clean, and salable article. A boy "treads in" as the final picking goes on. The nails that jingle in his pockets to the tune he whistles will hold the hoops and heads in their places. The barrel then awaits shipment, per packet, to Boston.

About the first of September the majority of the mossers close up their work on the beach, and fit out for the herring fishing. A few linger and cure another pull, if the weather favors.

As the number of men who make it their business to collect and cure this plant is increasing every year, the question is often asked, "Will it run out?" It is not certain that the rocks, like some well-tilled soils, are increasing in depth and fertility, but it is certain that the moss grows of a better quality and quite as quickly the oftener it is pulled.

Its uses.—There is always a demand for a prime article of Irish moss for culinary purposes, but the amount thus consumed is comparatively small, as a limited quantity of moss yields a large amount of jelly. In the form of blanc-mange, it is an agreeable and nutritious article of food.

In Ireland carrageen is highly esteemed for its medical virtues, being regarded by some as a universal panacea. It was once a fashionable remedy in consumptive cases. As a demulcent for colds and fevers, it is very effective. Carrageen has been much confounded with *Cetraria islandica* (Iceland moss), which contains starch along with a bitter principle, used as a tonic and demulcent. This opinion has extensively prevailed, and many still assert that the edible algæ of Ireland and the lichen of Iceland are identical.

Its most important use is as sizing, it being used in the manufacture of cloth, paper, and felt and straw hats. The poorer qualities of moss are bought up for size. The hand-pulled moss, however, contains more starchy matter than the variety which is never exposed to the air. The second quality of moss is sold to the brewers. All beers when well brewed and sound, after a certain repose, become transparent or "bright," as it is sometimes termed. When, however, beer is sent out very new, it is necessary to "fine" it, or impart to it that "brilliant transparency" which is so agreeable to the eye. This is done by means of finings. In Europe isinglass is used for this purpose, and a lengthy formula is given for its preparation; but in this country Irish moss performs the same service without any preparation other than that given it by the curer. A certain amount of the moss is boiled up with the beer. The fluid gelatine unites with the tannin of the hops and forms a flocculent mass, which, enveloping the suspended feculencies, produces the clarifying action desired. The impurities are removed in the form of scum, while with isinglass they are carried to the bottom in the form of sediment. The beer is called "stubborn" by the brewers when a disengagement of carbonic acid gas occurs, the flocculent particles being thereby kept moving about without clearing the beer.

It is also used for fining coffee, and if it has no other recommendation, it is certainly cheaper than eggs.—*U. S. Agricultural Report for* 1866.

THE ANIMAL CHARCOAL USED IN SUGAR REFINING.

(Transactions Philosophical Society Glasgow, May 4.)

Dr. Wallace stated that his communication to the Section was not to be dignified by the name of a research, but as his name had been associated with the chemistry of sugar-refining during the last ten years, he thought it likely that, as a result of his observations and experiments, he might be able to mention some things not contained in books. He stated briefly the mode of making animal charcoal from bones, and mentioned the principal Scottish manufacturers of the substance. All the bone char made in Glasgow, Paisley, and Greenock, in addition to a large quantity imported from France and Russia, is used in the Clyde refineries. A large amount of it is manufactured; for notwithstanding the fact that the charcoal lasts a considerable time, it has to be occasionally renewed, owing to the stock gradually dwindling down from various causes. The author calculates that the quantity of animal charcoal in actual use in the Clyde refineries is probably well nigh 5,000 tons, and that the annual renewal is probably about 1,500 tons.

The carbonisation of the bones is usually continued for twelve hours, that length of time generally giving better charcoal than when the bones are only carbonised for six hours, even though in the latter case the heat is made stronger. After the bones are charred they are crushed between rollers, and the charcoal is ready for use when the dust is removed. The quality of the char varies with the kind of bones employed, and the care observed in the charring operation. Hand-picked home-collected bones make the best charcoal. Besides these there are the shank bones from the *saladeras* of Brazil and Buenos Ayres; camp bones dug up from old battle fields, and bearing evidence of having been buried for a long time, and the charcoal from which may be easily distinguished from that prepared from home-collected bones; and there are also large shipments from Italy and Turkey, including the bones of the camel along with those of cattle, antelopes, sheep and horses.

In the analysis of the best charcoal from home-collected bones, carbon usually occurs to the extent of about ten per cent., the the remainder being the phosphates and other mineral ingredients of the natural bones. The carbon varies with the amount of grease and gelatin left in the bones after boiling, and it also varies in the different parts of the same bone,—the hard exterior containing less than the extremities and spongy interior of the bone. Charcoal as met with in commerce usually contains about ten per cent of water, as water is used to cool the char as it is drawn from the retorts.

The author then stated generally the method of conducting the analysis. It presents certain difficulties, notwithstanding the apparent simplicity of the composition of bone charcoal. He instanced carbonic acid as offering some difficulty, and said that his own method of estimating it was less complicated than the one given by Fresenius, although the latter is otherwise equally good. The method used by some chemists of precipitating the phosphate of lime, and then throwing down the lime in the filtrate in the usual way, he characterized as giving entirely fallacious results. Free lime has been occasionally found by the author, but only in minute quantity. Before estimating the carbonic acid the finely pulverized charcoal should be treated with solution of carbonate of ammonia.

Chemists have long been aware of the presence of nitrogen in animal charcoal, but the custom hitherto has been to include it in the carbon. Dr. Wallace finds it to vary in amount, and to diminish in quantity as the char is used. He found it to be 1·55 per cent in a total of 8·5 of so-called carbonaceous matter in char made from home-collected bones; and in another sample made from foreign bones it was 1·08 out of 9 parts of carbonaceous matter. Two samples of moderately old charcoal gave respectively ·3 and ·55 of nitrogen, while the carbon was reported at 15 and 17, respectively. The author did not venture to say whether or not the nitrogen plays any important part in the decolorising action, although, he said, no really good decolorising agent exists that is not made from an animal substance. It is not enough that the charcoal should be porous, for wood charcoal is so, and yet it is practically useless as a decoloriser.

Traces of ammonia always exist in new char, but the amount is so minute that the author has never estimated it. Frequently, however, it exists in the form of sulphide of ammonium, a compound which greatly damages sugar run through it. Such char should be well washed and reburned before being used. The washing removes common salt, ammonia, and the sulphide of calcium which is likely to be present if the char has been overburnt. The last-mentioned substance is due to the decomposition of the sulphate of lime, and acts injuriously on the sugar. Sulphuretted hydrogen is also given off from overburnt charcoal when treated with water or acid. A sample of new char gave ·08 per cent. of sulphuretted hydrogen on treating it with hydrochloric acid. Combustible gases are frequently given off by both old and new char, and sometimes they form explosive mixtures with the air of the cisterns.

Speaking of the mechanical properties of animal charcoal, Dr. Wallace said that he had long regarded the bulk occupied by the char as compared with its weight as a property of great importance. He stated that a ton of new and dry char fills a space of about 48 or 50 cubic feet, while a ton of old char may fill no more space than 40, 35, 30, or even 28 cubic feet, the apparent density of dry charcoal thus becoming sometimes nearly double what it was. But the absolute specific gravity of old and new charcoal varies but very slightly. That the charcoal rapidly diminishes in bulk while the real gravity remains practically unaltered is a point of great importance, and one to which the author thinks he was the first to direct the attention of sugar refiners. The inference is that, by frequent re-heating, the particles of charcoal become smaller, owing to the diminution of the pores; hence the apparent gravity of char gives a ready and certain indication of its value in sugar refining. From experiments made by Dr. Wallace, a specimen of a new char lost as much of its porosity by burning in a covered crucible during eleven hours as it would have lost by re-burning about one hundred times in a sugar-house. He is of opinion that the porosity of the charcoal is diminished by a sort of agglutination of the particles of phosphate of lime during the re-heating. New charcoal will hold from 80 to 100 per cent. of water, and is made preceptibly wet with 20 per cent. of water, while old charcoal (two or three years in use) will only hold from 30 to 45 per cent., and is made preceptibly wet with only 5 per cent. of water. These facts prove that the pores become either smaller or less numerous as the charcoal is used, and point to the conclusion that, to keep animal charcoal in the most efficient state, it should be re-burned in such a way as to lessen the porosity as little as possible.

Dr. Wallace finds that, although the action of heat is the main cause, it is not the only one concerned in producing an increase in the apparent gravity of the charcoal. The proportion of carbon may increase during use from 8 or 9 per cent., to 14, 15, or even 19 per cent.,—this increase being derived from the organic impurities in the sugar. The carbon obtained in the carbonization of these impurities is deposited partly on the surface, but largely also in the pores. This is found to be a great evil, and a great point is gained if it can be prevented. That it can be prevented is proved by the fact that in some refineries the amount of carbon does not increase, while in others it even decreases, but this is owing to mismanagement in the re-heating. When the retorts are quite tight, and the heat not excessive, the carbon necessarily increases if the precaution be not taken to wash well before re-burning, so as to remove all the organic matter absorbed from the sugar liquor. To do this, boiling water is requisite, and one of the most advanced of the Clyde sugar-refiners insists that *the charcoal should even be boiled with the water.* The author's experience accords with that of the sugar-refiner referred to.

In ordinary cane sugars there is from half to one per cent. of soluble mineral matter, consisting of salts of potash, soda, lime and magnesia ; and in beet sugars there is much more—from 1½ to 3 per cent., and sometimes as much as 6 or 7 per cent. The highly soluble salts, such as the salts of potash, do not affect the charcoal, and only annoy the refiner by accumulating in the syrups ; but the sulphate of lime is detrimental, owing to its comparative insolubility, and to the fact that it is readily absorbed from the sugar liquor by the charcoal. It may be removed, however, by copious washing and boiling, and it is even removed in solution by washing with weak sugar liquors. Such charcoal is sure to have its sulphate of lime increased if it be washed with water naturally containing that substance in large quantity. The author stated that he had analysed charcoal containing 2½ per cent. of the salt, and that the usual amount in old char is from half to three-quarter per cent., but that in extreme cases it may be present in Clyde charcoal to the extent of 1 per cent. The carbonate of lime present in some hard waters is also absorbed by the charcoal.

The author briefly considered the offices fulfilled by the various ingredients of the charcoal. Animal charcoal has great power of absorbing gases, coloring matters, and such mineral salts as are but slightly soluble in water. The removal of coloring matter is the chief object in view; but gummy and other extractive matters have also to be removed. Animal charcoal extracts them both with equal facility. The author finds that it readily absorbs ordinary egg albumen and gum, and he thinks that the circumstance that each of these bodies has an insoluble modification may have something to do with their absorption by the charcoal. Iron is readily removed from sugar liquors by passing them through a cistern of new char. It is the nitrogenous carbon which is the most powerful decolorising ingredient of the char, for if the char be burnt perfectly white, on the surface and without, it does not remove the slightest trace of coloring matter. This fact the author has demonstrated by actual experiment: it is with him no mere opinion.

The highly porous carbon is not the only useful ingredient, although it is essentially the decolorising agent. Carbonate of lime is also of use in neutralising the small proportion of free acid present in almost all sugars except beet; and it is still more important in neutralizing the lactic and other acids formed in the weak liquors, by a process of fermentation which it is difficult to prevent. Hence charcoal deprived of its carbonate of lime is objectionable, and its use is certain to produce sour liquors and give rise to the presence of iron in the low-class sugars. As the water of Greenock and Glasgow contains only traces of carbonate of lime, the quantity of that salt naturally present in charcoal gradually lessens, until in pretty old char it is sometimes reduced to about 1½ per cent. In refineries conducted on scientific principles the amount is never suffered to fall so low. If it falls below 2½ per cent., sour liquors are sure to follow. When very hard water is used the carbonate of lime either decreases very slightly or it increases, and sometimes even to an alarming extent, as in the continental beet refineries, where the evil is a very serious one.

Dr. Wallace referred to the various methods—especially those of Beanes and Gordon—for getting rid of any excess of carbonate of lime in the charcoal; and then spoke of the inconvenience attending the use of animal charcoal in sugar-refining, owing to its oxidizing influence upon the organic matters extracted by the char from the sugar, and to the alteration of the nitrogenous compounds by means of which fermentation is induced, and ultimately organic acids are formed at the expense of the sugar. These acids make the washings sour and putrid, and a necessary and evil result of that is that they decompose sulphide of calcium or sulphide of iron in the charcoal, and dissolve carbonate and sulphate of lime and oxide of iron; then, as the washings are either thrown back amongst the other products of the refinery, or mixed with a fresh lot of raw sugar, they occasionally cause an immense amount of mischief. The author said that, owing to its importance, this department of sugar refining had occupied a good deal of his attention, and he claimed to have made known to refiners the means of entirely preventing such injurious results as those referred to. His method is a follows:—While the liquor is on, the char cisterns are kept at a temperature of at least 150° Fahr., so long as the liquor is strong, to prevent fermentation. Then the water used for washing down the sugar is to run on quite boiling, and this is done with all the washings which are to be preserved. When these directions are attended to, there is no difficulty with sour washings, or with the presence of iron in the low-class sugars. The char should ultimately be washed with boiling water for 10 or 12 hours, or even boiled with it.

The author concluded with a detailed account of the modes of re-burning charcoal, and of the good and bad qualities of the different kinds of re-burners now in use, and suggested the directions in which improvements might be made.—*Lond. Chem. News*, *May* 22, 1868.

ON THE SOURCES OF SULPHUR USED IN THE MANUFACTURE OF OIL OF VITROL OR SULPHURIC ACID.

By James Mactear, F.C.S.

Of the Alkali Department, St. Rollox Chemical Works.

After making some few preliminary remarks, Mr. Mactear proceeded to say that the quantity of oil of vitrol manufactured in this country exceeds 500,000 tons per annum, and of this quantity about 320,000 tons are used in the conversion of common salt into sulphate of soda, for the production of alkali by Leblanc's process, the remainder being taken up chiefly in the manufacture of artificial manures. The sulphur consumed last year, in making oil of vitrol, amounted to 160,000 tons, but of this quantity only from 10,000 to 20,000 tons consisted of brimstone; the remainder is obtained from pyrites, of which upwards of 375,000 tons were burned. The brimstone is used chiefly in the manufacture of "sale acid," and this again is used mostly for bleaching purposes, which require a very pure acid, that made from pyrites being always more or less contaminated with arsenic and other impurities of a detrimental character.

Since the year 1851 the price of brimstone has been very high, owing to the great quantity of sulphur required in the treatment of the vine disease.

Up to the year 1856 all the pyrites used was obtained from Cornwall and Ireland, except a small quantity of "coal brasses" found in the coal-fields. In that year some cargos of Spanish pyrites, containing a small per-centage of copper, were imported and used by the Tyne manufacturers, who liked the ore very much, on account of the high percentage of sulphur which it contained; while it is burned at as low a cost per ton as the ore of low strength. At least one half of the ore now used is Spanish cupriferous pyrites. The author illustrated the economy of working pyrites by stating that Irish ore contains about 35 per cent. of sulphur, while Spanish ore contains as much as from 45 to 50 per cent.; and, assuming that the cost of burning in both cases is 2s. per ton, in the one case 35 parts, and in the other from 45 to 50, are burned off for the same amount. But it is found that the refuse contains, in both cases, about 5 per cent. of sulphur on the average, so that there is actually burned off 86 per cent. of the sulphur of the Irish ore, and 89 per cent. of that contained in Spanish ore of 45 per cent. strength, thus giving a clear gain of 3 per cent.

Mr. Mactear then referred to certain disadvantages attending the use of pyrites instead of Sicilian sulphur :—

First. A greater amount of chamber space is required for burning pyrites than for sulphur. This is usually taken to be in the ratio of 45 to 30, and is due to the fact that the iron of the ore is peroxidised during combustion, and therefore uses extra oxygen and nitrogen (which passes on unchanged); and for the extra amount of both of these gases chamber space must be provided.

Second. The arrangements for burning pyrites are much more closely than for burning sulphur; the heat is greater, and therefore there is more wear and tear of the chambers and connecting-pipes.

Third. There is always a larger percentage of nitre required with pyrites than with brimstone.

Fourth. Owing to various causes, the acid produced is of inferior quality.

Fifth. It involves more labor to work pyrites than to work brimstone; and there is a large amount of refuse—approximately three-fourths of the weight of the raw ore—for which room has to be provided.

Sixth. In burning pyrites, and during transit, much *small* is made, and this cannot be burned properly unless in a separate furnace. The most common form is a muffle furnace; in it the "smalls" are roasted, with free admission of air, but the quantity passed into the chamber is so great, in proportion to the sulphur, that this method is objectionable.

Taking all these disadvantages into account, it is found that, in making ordinary sulphuric acid, one ton of sulphur, in the form of pyrites, costs only £4 10s., while Sicilian sulphur costs from £6 to £7. The ore is usually sold at so much per cent. of sulphur per ton; for some years the rate was 1s. per unit, at present it is 8d.

Theoretically, 100 parts of pure sulphur should yield 306·25 parts of oil of vitriol, and in practice it is found that 100 parts of brimstone, containing one per cent. of impurity, can be made to yield 302 parts of acid, while with pyrites the acid produced only amounts to 285 parts of the sulphur actually burned, or 275 parts on the sulphur actually present in the ore.

The author then referred in detail to the several sources from which the required sulphur is obtained. He spoke of them in the following order, and illustrated his remarks by a very extensive collection of specimens :—

Sicilian Sulphur.—This is found chiefly in the volcanic districts on the south coast of Sicily, more or less pure, and imbedded in lime and clay marl. It is extracted from the crude mineral in various ways, according to the richness of the material. If the mineral is very rich, it is simply melted in a cast-iron pot, and then the liquid sulphur is ladled out into moulds ; but if the mineral is poor in sulphur—some kinds containing only 15 to 20 per cent.—it is distilled in earthen retorts, and usually condensed in water. As imported into this country it consists of three qualities—"firsts," "seconds," and "thirds." The latter only is used in making oil of vitrol, the others are refined for making gunpowder.

Spanish Pyrites.—In the author's opinion, this mineral claims the first attention, owing to its forming at least one half of all the pyrites burnt in the sulphuric acid manufacture. It is found chiefly in the province of Huelva ; the deposits pass, however, from Spain into the adjoining part of Portugal. Some of the deposits are nearly a mile long, of great depth, and of varying width. Till lately, the great bulk of pyrites imported was brought chiefly from Mr. Mason's mines, near the river Gaudiana. The owner was the first person to construct a railway as a means of transport from the mines to the coast, instead of the antiquated and expensive method of mule carriage. Mules are still employed at all the other mines, and the mineral is carried in sacks or baskets on the mules' backs. A few years since, the Tharsis Mining Company, consisting chiefly of Glasgow capitalists, was formed to purchase and work a number of mines. The pyrites from the Tharsis mines are now used largely, and the imports of Mr. Mason's ore have been much reduced. The latter usually contains about 50 per cent. of sulphur, besides 3 or 4 per cent. of copper. The Tharsis mineral contains 48 to 50 per cent. of sulphur, and 4 to 5 per cent. of copper. Both kinds are much the same in their working qualities; they burn well, and make comparatively little dust in breaking.

Norwegian Pyrites.—Many mines of pyrites occur in Norway, but those in the vicinity of Drontheim are the most important. The Norwegian ore is pretty largely imported into this country, but chiefly to the Tyne. The largest quantity is raised in the mines Ytteröen, the annual product being from 6,000 to 8,000 tons. It consists of very small crystals, is of good quality, burns well, and does not slag in the kilns. It contains about 44 per cent. of sulphur, and from 1 to 2 per cent. of copper. Under this head Mr. Mactear referred to a second quality of this mineral; to an excellent variety obtained about 30 miles from Drontheim, and containing but a trace of copper; to the ores obtained from some mines opened lately near Bergen; and to another variety which comes from Nordland, yielding 42 per cent. of sulphur.

Swedish Pyrites.—This is obtained in mining for copper ores, and is said to exist in enormous quantities, but at present the want of means of cheap transport to convenient shipping, prevents it coming into extensive use. A few cargoes, however, have found their way to Britain, and the ore itself has been found to work.

Belgian Pyrites.—Large quantities of this ore are imported, especially to the Tyne—the freight from Antwerp being very low, sometimes only 6d. per ton. The mines yielding it are in the districts of Liege and Namur, and are worked primarily for lead and zinc ores. One kind is called alluvial pyrites, and has the form of coprolites, and few of the pieces weigh more than a pound each. It burns well if used along with Norwegian or other ores. Another resembles a slag or cinder, and often contains lead or antimony. Belgian ores contain from 40 to 50 per cent. of sulphur, and traces of thallium.

Westphalian Pyrites.—This resembles a very poor fire-clay, or shale, in appearance, but it burns well. It is said to contain a considerable quantity of thallium. The analysis gives 42 to 45 per cent. of sulphur-

Italian Pyrites.—Very little of this is imported, for although it contains about 45 per cent. of sulphur, it also contains 9 or 10 per cent. of silica, and its physical properties are not in its favor.

Irish Pyrites.—This is obtained from the Wicklow mines, where it occurs in beds of great thickness. It contains from 30 to 35 per cent. of sulphur. A deposit occurs in the Vale of Avoca which contains about 44 per cent. of sulphur.

Cornish Pyrites.—Under this head the author included the ore from the mining districts of Dorset, Devon and Cornwall. It is got in the dressing of the lead and copper ores, and usually contains from 25 to 30 per cent. of sulphur and 1 or 2 per cent. of copper, and frequently arsenic. The author also referred to the fact that Mr. Vivian is making sulphuric acid by burning copper pyrites in kilns of peculiar construction.

Coal Brasses.—This material, also called "Scotch gold," is largely used, and is a cheap source of sulphur for acid to be used in making manures, &c. Even when well cleaned it always contains organic matter, and possesses other disadvantages; still it is useful in keeping up heat in the kilns if used along with other varieties.

Cleveland Pyrites.—Although interesting to the geologist, this mineral is of little interest to chemical manufacturers, and the author said he only knew of one establishment where it is used—one near Middlesbro'-on-Tees.

The author concluded his paper by referring to the sulphur-recovery process, patented by M. Mond, and now being practically applied under his (the author's) care at St. Rollox Chemical Works.—*London Chem. News, May,* 8, 1868, from *Proc. Philos. Soc. Glasgow.*

OBSERVATIONS ON THE PRODUCTION OF NITRE IN INDIA.

By Dr. J. W. Palmer.

The native "sorawallahs" make it the business of their lives to search for saline incrustations in and around the mud walls which enclose the primitive dwellings of the inhabitants of the north-western provinces of India. When the appearance of the soil indicates the existence of nitre they scrape off a thin layer of the impregnated earth and lixiviate it in clay vessels, either with water alone or with the last washings of a previous operation, the solution thus obtained being poured into shallow pans of unglazed earthenware, and there left exposed to the sun and hot winds of a tropical climate, until the nitre crystallizes out. The crude product is then partially purified by being again dissolved and recrystallized. The saltpetre is recovered in the form of dingy prismatic crystals, and common salt to the amount of from one to nine per cent. is left in the mother liquors, which upon evaporation to dryness is recovered and separately collected. The sorawallah makes periodical visits, and secures fresh collections of nitre from the same spots of ground week after week, the rate of production remaining constant whilst the dwellings are inhabited, but decreasing gradually if from any cause the villages are deserted. The physical features of the nitre-producing regions were then described, and the author referred to the conditions under which most nitre seemed to be obtained; these were dependent upon the existence in the plains of India of a friable, nodular, calcareous rock called "kunkur," and water must not occur nearer the surface than twenty feet; but it was remarked that the largest yield of nitre was furnished in the four months of the year constituting the rainy season, the heavy tropical rains having the effect of washing the salt from the depths of the soil to the surface, rather than of dissolving it out entirely and carrying it into the rivers. The process of nitrification commenced with the conversion of urea, &c., into nitrate of lime, under the combined influences of heat, moisture, and of the before-mentioned calcareous rock; whilst the practice of the natives of throwing their wood ashes into the common drains supplied the carbonate of potash from which, by double decomposition, the nitre was formed. These changes only occur in the neighborhood of villages, or densely populated localities, but the process of artificial generation of saltpetre had been successfully carried out in connection with the Indian jails. The author adds a speculation as to the influence of electrical agencies (thunderstorms) in contributing towards a more rapid formation of saltpetre.

The President, in proposing a vote of thanks to Dr. Palmer, invited discussion upon the electrical theory of the generation of nitric acid; whether, all other circumstances being the same, most nitre should be formed during the season in which thunderstorms were prevalent.

Mr. W. H. Perkin expressed his surprise in noticing how few sparks from a Rühmkorff coil sufficed to produce red fumes in a jar of air, especially if the temperature was somewhat raised, and the indigo test at once showed the presence of nitric acid.

Mr. David Forbes had had opportunities of studying the saltpetre manufacture in several parts of the world. In order to ensure a supply of saltpetre in case of war, in Sweden, every peasant was bound to supply a certain amount of nitre to the Government, as part payment of the taxes. It was the practice to rely upon wood ashes from the household fires as the source of potash, the other ingredients being nearly the same as in India, with lime added where it did not occur naturally. In the cold climate of that northern latitude there was no suspicion of lightning having any direct influence upon the generation of nitric acid. Spain formerly got much saltpetre from the plains of the south, where nitrogenous organic matter was somewhat scarce, but potash abundant, as the result of the decomposition of the felspar of the granites. In Peru, Chili, and other parts of the continent of South America, where rain *never* falls, immense accumulations of nitrate of soda were known to exist; in fact, it appeared only necessary to place organic matter in contact with carbonate of lime and common salt to secure the production of the nitrate of soda or Chilian saltpetre in that climate, and in these districts all the wells were so fully charged with saline matter, that it was necessary to procure water distilled from the sea with English coal, at the cost of £3 or £4 per ton, for ordinary household use; even the locomotives on some South American lines had to be supplied with distilled water, to avoid the formation of saline crusts in the boilers.

Dr. J. H. Gilbert was led to believe that the process of nitrification was practically independent of the oxidation of atmospheric nitrogen or of electrical action; some years ago he searched for ammonia and nitric acid in rain water which fell during a heavy thunderstorm, and found ammonia without difficulty, but the quantity of nitric acid was excessively small.

Mr. John Williams took occasion to examine for *sulphuric* acid and ammonia in the rain water which fell during the thunderstorm in London about the end of May. The Nessler test immediately indicated the presence of ammonia, and the amount of sulphuric acid was by no means inconsiderable.

Dr. Hugo Muller said it was well known that organic matter containing but little nitrogen furnished nitrate as the result of its putrescence, and it had been hinted that the oxidation of these organic matters was capable of inducing (by a sort of catalytic action) the formation of nitric acid from the surrounding atmospheric nitrogen. Schönbien proved that nitric acid was formed merely by bringing nitrogen gas in contact with flame.

Dr. Guthrie was desirous of assuring himself that the proceeds of the sale of nitre more than covered the cost of production under favorable circumstances of native labor. Some years ago he proposed to the Government authorities to collect saltpetre in the Mauritius, for the town lies low and near the sea, and there were difficulties in the way of securing good drainage. Not only as a commercial speculation, but as a sanitary measure, the removal of this sewage, and the conversion of it, if possible, into saltpetre, seemed to be important. His advice was not adopted, and since that time his views had received confirmation by the fearful ravages of disease and high rate of mortality which had occurred in the island.

Dr. J. Attfield conceived that the largest production of nitre would not coincide with the periods when thunderstorms most frequently succeeded each other, but that a necessary interval must elapse to allow time for the oxidation to proceed.

Dr. Odling referred to an anomaly in the fact that starch paste, although destitute of nitrogen, gave off ammonia during its fermentation. For his own information he enquired whether the great bulk of nitre imported from India is made by the manurial collection plan which had just now been described?

Dr. Palmer supplemented his previous remarks by making a few statements respecting the depth at which water ordinarily occurred in the large tracts of country near the Himalayas, as compared with other localities in the plains of the Ganges. There could be no doubt about the fact that nitre was collected in much greater quantity during the four months of the rainy season than at other times, but whether the circumstance was due to the more speedy recovery of the salt, already formed, by the solvent action of water resulting from heavy rains penetrating the earth to a greater depth, and by subsequent evaporation becoming reabsorbed to the surface; or to a direct influence of electrical action in promoting the nitrification, seemed to him (the speaker) well worthy of discussion, and he was only glad to have started a subject of so much interest to the members of the Society. For his own part he now thought that the lightning had very little influence in contributing to the formation of saltpetre. In reply to Dr. Odling he would state that all the saltpetre which came to England was the produce of the small collections brought in by the "Sorawallahs," who for centuries past and for many succeeding generations had carried on this business in the Bengal provinces.—*Lond. Chem. News*, July 3, 1868.

ON IODIDE OF STARCH.

By M. Guichard.

Since its discovery, the constitution of this body has been often discussed; according to some chemists it is only a mixture of iodine and starch, or starch tinted by iodine; others, on the contrary, consider iodide of starch to be a definite combination of iodine and starch, with excess of iodine. The general opinion is that the iodide of starch is a simple mixture, and the colorless iodide is only starch with hydriodic acid. M. Guichard thought that an examination with the dialyser would throw light upon the question. If there existed, in fact, a combination of iodine and starch, the compound ought to be colloidal, and remain in the dialyser; if, on the contrary, only dissolved iodine and hydriodic acid were there, starch would alone remain. M. Guichard made a great number of experiments; he remarked that iodine passed the dialyser first, then hydriodic acid in large quantity; afterwards the iodide became suddenly decolorized, and later the iodine, as well as the hydriodic acid, ceased to be disengaged. When the experiment was made with iodide of starch decolorized by heat, the disengagement of iodine was difficult to perceive; that of hydriodic acid was alone observed; the same was the case with the iodide heated in close vessels for some hours to 100°, then to 150°. The colorless iodide of starch has then no existence; the so-called iodide of starch is simply starch tinted by iodine. Heat thus separates the iodine from the starch; the iodine then remains in the water, either as such or as hydriodic acid.—*Lond. Chem. News*, July 3, 1868.

RELATION OF THE CHEMICAL CONSTITUTION AND PHYSIOLOGICAL ACTION OF MEDICINE. ADDITION OF IODIDE OF METHYL TO VEGETABLE ALKALOIDS.

At one of the recent meetings of the Royal Society of Edinburgh, a very interesting paper was read by Drs. Crum, Brown and T. R. Fraser, upon the influence of direct chemical addition upon the physiological action of substances. This paper is the first of a series which may be expected to throw great light upon one of the most interesting questions which can suggest themselves, viz., the relation existing between the chemical constitution and the physiological action of medicinal and poisonous substances. That such a relation must exist, we can have no doubt; and, indeed, attempts have been made by some to establish the relation in certain cases. Hitherto, however, the subject has not received that systematic investigation which it is now receiving at the hands of the authors of the paper.

In order to arrive at any accurate knowledge as to the influence which chemical constitution exerts upon physiological action, it would appear to be desirable to take substances having a very definite and energetic physiological action, and then to perform upon them a chemical operation, having for its object the promotion of a definite change in the constitution, and to examine the modification which the physiological action has undergone. Such has been the plan which the authors have pursued; the bodies which they have chosen for examination are the more active of the vegetable alkaloids, and the chemical operation, of which they have studied the effect, has been the direct addition of iodide of methyl. It was shown by How that, when iodide of methyl acts upon strychnia, brucia, morphia and other alkaloids, it adds itself to them, and beautiful crystalline bodies are produced which differ considerably in character from the salts of the alkaloids. The authors have already examined the physiological action of the bodies produced by the addition of iodide of methyl to strychnia, brucia, morphia, thebaia, codeia, and nicotia.

The iodide of methyl-strychnium is prepared by first treating finely pulverized strychnia with a solution of carbonate of potash in dilute alcohol, and then adding an excess of iodide of methyl mixed with about its own volume of rectified spirit, and digesting in a flask for twenty-four hours. The spirit is thereafter distilled off, the residue dissolved in water, and crystallized. It is well known that doses of strychnia, varying from one-twentieth to one-thirtieth of a grain, rapidly produced in rabbits most violent convulsions, and in a few minutes kill the animal; the phenomena produced being due to a localization of its action on the cord. It was found that twelve grains of iodide of methyl-strychnium, when administered (by subcutaneous injection) to rabbits weighing three pounds, produced no effect whatever. Fifteen grains produced symptoms, and twenty killed; but the animal died with symptoms altogether different from those produced by strychnia. In place of violent and spasmodic convulsions and muscular rigidity, the appearances were those of paralysis with complete general flaccidity. The spinal motor nerves were either paralyzed, or speedily become so; and, instead of the speedy occurrence of muscular rigidity, the muscles remained flaccid, contractile, and alkaline for several hours. In short, by the addition of iodide of methyl to strychnia, the toxic properties of the latter are diminished about 140 times; and the body produced possesses the physiological action of curare, viz., paralysis of the end-organs of the motor nerves.

Similarly, Brown and Fraser have discovered that the toxic properties of brucia, thebaia, and codeia are immensely diminished by the addition of methyl; and that the bodies produced, instead of being, as all three of these alkaloids are, strongly convulsent, possess, on the contrary, the physiological action of curare. Morphia, as is well known, possesses both soporific and convulsent properties; its toxic action is much diminished by the addition of iodide of methyl; its convulsent action is destroyed, but its soporific action remains. The above are amongst the chief results which have been obtained by the authors, and appeared to possess such interest as to warrant my drawing the attention of your readers to them.—*Chem. News*, *March*, 1868, from the *British Medical Journal.*

ACTION OF VERATRUM VIRIDE AND V. ALBUM.

Dr. Oulmont (*Neues Repertorium für Pharmacie*, 1868, Bd. xvii, Heft. 3, p. 177) publishes some interesting observations and experiments made on man, dogs, rabbits, and frogs, with veratrum viride. When small, non-fatal doses were given to the lower animals, the symptoms were localized chiefly in the digestive, respiratory, and circulatory symptoms, and on the general force. In the digestive system, they consisted of nausea, of vomiting, which sometimes lasted for twenty hours, and of diarrhœa. If doses sufficient to cause death were administered, these symptoms occurred in an excessive degree, but no signs of inflammation could be discovered. The respirations were powerfully affected at an early stage; they were sometimes unequal and irregular; they were sometimes diminished in number to two or even one in the minute; and in frogs they were sometimes altogether stopped. The rapidity of the circulation was soon diminished, the pulse being often reduced within fifteen minutes by from twenty to forty beats in the minute. The effect on the temperature was somewhat less marked. It falls two, three, or five degrees in from an hour and a half to two hours, and it may remain at this reduced point as long as twenty-four hours. The hyposthenic action is nearly immediately produced, and the weakness and sinking of the general force are prominent effects of large doses; but even when these are sufficient to cause death, neither muscular stiffness nor convulsions ever occur. The latter symptoms, however, are the special characteristics of the action of veratria. For the purpose of comparison, Oulmont examined the action of veratrum album. He found that it is distinguished from that of V. viride by the greater violence of its effects on the digestive system, where it always produces inflammatory lesions, and by the greater rapidity of its action. Finally, the action of the alkaloid veratria, was investigated with the somewhat unexpected result, that it is not the true active principle of veratrum. Some V. viride was completely freed from the alkaloid, and an ordinary dose given to an animal; the effects were in all respects the same as those of the usual preparations. Oulmont concludes that veratrum viride is a cardiac poison analogous to digitalis, from which it is distinguished by its extraordinary rapidity of action. The investigation is of special interest as, until now, a considerable amount of uncertainty has existed as to its exact physiological action.—*Amer. Journ. Med. Sci., July,* 1868, from *Journ. Anat. and Phys., May,* 1868.

ON THE MEANS OF RECOGNIZING THE SOURCE OF AN ALCOHOL.

The source of an alcohol is usually ascertained by pouring a small quantity into the palm of the hand, and allowing it to evaporate; as the alcohol is more volatile than the empyreuma, the odor of the latter reveals the origin of the alcohol when the evaporation is almost terminated. But this process is very imperfect, as the alcohol may dissolve fatty substances from the hand, which will modify its odor. It is better to operate in a glass or porcelain capsule; but the following plan is still more safe:—Mix the alcohol with an equal quantity of ether, and then add a volume of water equal to that of the mixture. The ether dissolves the empyreuma, and carries it with it when separating with the rest of the liquid. Then evaporate this ether in a porcelain capsule, and the residue gives the empyreumatic odor so characteristic that it cannot be mistaken. Rum, arrack cognac, potato, or wood spirit may thus be easily distinguished. The test only occupies a few minutes; but rectified ether must be employed, as common commercial ether also leaves an odorous residue on evaporation.—*Chem. News*, *June* 19, 1868, from *Neue Gewerbeblätter aus Kurhessen.*

OZONE.

Dr. H. Day, in a report on this article made to the St. Andrews Medical Graduates' Association, gives the conclusions at which he has arrived, the most important of which we subjoin:

There can be no escaping, at this moment, from the theory that ozone is a modified condition of oxygen, indeed, is oxygen plus force, which force is probably used in condensation—in other words, the power or capability of oxygen to combine with itself.

For the production of ozone in the laboratory, no method is so good as that accomplished by the aid of the induction coil. The production of ozone in the air, if it be there, is not yet in any way definitely understood.

The ordinary tests for ozone are imperfect, not because they will not prove the presence of ozone, but because they prove too much—that is to say, the presence of other bodies also common to the atmosphere.

In its action on the body the effects of ozone seem to be confined to the respiratory passages and structures; in fact, it is purely local in its action, resembling closely diluted chlorine and diluted bromine in vapor; the phenomena induced, varying in intensity, may be catarrhal, bronchial, or pneumonic, nor is there any evidence of any other class of diseases from ozone.

On dead matter, ozone exerts a powerful destructive action, resembling in this way chlorine, iodine, and especially bromine.

Ozone is a disinfectant and deodorizer belonging to those bodies which disinfect and deodorize by resolving and decomposing into primitive and innocuous forms, competing in this respect with substances already named—*i. e.*, chlorine, bromine, and iodine. It possesses these qualities in a less degree than chlorine and bromine, and is, in many cases, not so applicable as iodine.

As a preventive of disease, ozone can only act by destroying organic animal poisons, in which respect it may be compared with the substances I have more than once named. With regard to the disinfecting and deodorizing powers of ozone, I would refer you to the opinions of the late Dr. Barker, contained in the Hastings prize essay for 1865. The subject of comparison, and indeed the whole subject of deodorizing and disinfecting, is there so admirably, so exhaustively discussed, as to leave, it seems to me, nothing further to be said on the subject.

Lastly, as a remedy. In the form of ozonized oil, of ozonized ether, and ozonized water, it once more ranks with a similar combination of remedies, containing chlorine, bromine, and especially iodine. Whether, in any respect, it may prove to have greater advantages than the last named trusty and ready agent, can only be conclusively arrived at by determining whether it will do what iodine will *not* do, and this can only be decisively made out by applying to it the test of inductive philosophy—a rigid exclusion of all that is ineffective.—*Amer. Journ. Med. Sci., July*, 1868., from *Med. Press and Circular, Jan.* 15, 1868.

RELATIVE VALUES OF FRENCH AND ENGLISH WEIGHTS AND MEASURES.

By A. A. Fesquet.

I see in the column of Notes and Queries (American reprint, March, 1868) that one of your readers wishes some calculations showing the relative value of French and English weights and measures. Tables for this purpose are to be found in many technical works, but I think they are not so complete as those I join to this letter. You will see by the number of different values of the gramme, and of the carat weight, that "the doctors or the standards disagree."

The value I have adopted for the gramme is 15·438395 troy grains, calculated from 1 pound avoirdupois = 7000 grains = 453·4148 grammes.

It may be that these data, or my calculation, are incorrect; if so, I wish to be corrected. It would be a satisfaction to many of your readers to know the exact value in grammes of the English standard pound avoirdupois, and how many troy grains it contains. Most authors say 7000 grains; however, I have seen 7004 grains printed somewhere.

The use of the metric system is extending more and more; but the abbreviations in writing are not always short and corresponding to the simplicity of the system, therefore I have added to the tables a series of symbols for abbreviations, which will be understood by looking at them. The system is based on the same principles followed in chemical symbols Each unit and its prefixes are indicated by their first letter, with this difference, that a capital letter is used when the prefixes are those increasing the unit.

We use already: kgm. = kilogrammetre; we might have as well, kg°. = kilogramme degrees, g = gramme, instead of gm. or grm.

Philadelphia, March 23, 1868.

TABLES

Showing the relative values of French and English Weights and Measures, &c.

MEASURES OF LENGTH.

Millimetre	=	0·03937	inch
Centimetre	"	0·393708	"
Decimetre	"	3·937079	inches
Metre	"	39·37079	"
"	"	3·2808992	feet
"	"	1·093633	yard
Decametre	"	32·808992	feet
Hectometre	"	328·08992	"
Kilometre	"	3280·8992	"
"	"	1093·633	yards
Myriametre	"	10936·33	"
"	"	6·2138	miles

Inch ($\frac{1}{36}$ yard)	=	2·539954	centimetres
Foot ($\frac{1}{3}$ yard)	"	3·0479449	decimetres
Yard	"	0·91438348	metre
Fathom (2 yards)	"	1·82876696	"
Pole, or Perch ($5\frac{1}{2}$ yards) . .	"	5·02911	"
Furlong (220 yards) . . .	"	201·16437	"
Mile (1760 yards) . . .	"	1609·3149	"
Nautical mile	"	1852	"

SUPERFICIAL MEASURES.

Square millimetre	=	$\frac{1}{645}$	of a square inch
“ “	“	0·00155	“ “
“ centimetre	“	0·155086	“ “
“ decimetre	“	15·5086	“ inches
“ “	“	0·10769	“ foot
“ metre or centiare	“	1550·86	“ inches
“ “	“	10·7698	“ feet
“ “	“	1·196033	“ yard
Are	“	1076·98	“ feet
“	“	119·6033	“ yards
“	“	0·098845	rood
Hectare	“	11960·33	“ yards
“	“	2·471143	acres
Square inch	“	645·109201	sq. millimetres
“ “	“	6·45109	“ centimetres
“ foot	“	9·2903	“ decimetres
“ yard	“	0·836097	“ metre
“ rod or perch	“	25·291939	“ metres
Rood (1210 sq. yards)	“	10·116775	ares
Acre (4840 “ “)	“	0·404671	hectare

MEASURES OF CAPACITY.

Cubic millimetre	=	0·000061029	cubic inch
“ centimetre, or millilitre	“	0·061029	“ “
10 cubic centimetres, or centilitre	“	0·61029	“ “
100 “ “ decilitre	“	6·10295	“ inches
1000 “ “ litre	“	61·0295688	“ “
“ “ “ “	“	1·760773	imperial pint
“ “ “ “	“	0·2200967	“ gallon
Decalitre “ “	“	610·295688	cubic inches
“	“	2·2009668	imp. gallons
Hectolitre	“	3·5317	cubic feet
“	“	22·009668	imp. gallons
Kilolitre or cubic metre, or stere,	“	1·308	cubic yard
“ “ “	“	35·3171	“ feet
Myrialitre	“	353·171	“ “

Cubic inch = 16·3855 cubic centimetres
“ foot “ 28·3159 “ decimetres
“ yard “ 0·764520696 “ metre

AMERICAN MEASURES.

Winchester, or U. S. gallon (231 cub. in.)	=	3·785085 litres
“ “ bushel (2150·42 “)	“	35·23603 “
Chaldron, (57·25 cubic feet)	“	1621·085 “

British Imperial Measures.

Pint (⅛ gallon) .	=	0·567932	litre
Quart (¼ ") .	"	1·135864	"
Imperial gallon .	"	4·54345797	litres
Peck (2 gallons) .	"	9·0869159	"
Bushel (8 gallons) .	"	36·347664	"
Sack (3 bushels) .	"	1·09043	hectolitre
Quarter (8 bushels) .	"	2·907813	hectolitres
Chaldron (12 sacks) .	"	13·08516	"

—*London Chemical News*, May 8, 1868.

PHYSIOLOGICAL ACTION OF THÉINE.

Chemical analysis has shown that tea contains the same crystallizable, nitrogenized principle as coffee and cocoa. Dr. Leven conceived that it would be useful to determine by experiments whether the physiological effects were the same. Having already experimented with caffeine (see Amer. Jour. Med. Sci. for April, 1868, p. 525), he determined to experiment with théine on frogs and guinea pigs. The following are his conclusions:—

1st. Théine and caffeine, considered as one and the same alkaloid by chemists, seem to produce different toxic effects on animals submitted to their action.

2d. Théine is a less powerful toxic than caffeine, and it is only when given in double doses that the former produces the toxic effects of the latter.

3d. Théine also produces convulsive movements in the limbs, which Dr. L. has not observed from the action of caffeine.

4th. In other respects their physiological effects are identical. Both alkaloids seem to directly excite the heart and respiratory movements and to increase arterial tension. By exciting the circulation, they stimulate the central nervous system, the brain and spinal marrow; but they do not arrest the functions of the spinal cord and nerves. The tetanic convulsions resulting from their action is caused by the stimulation of the spinal cord. They do not abolish the functions of muscle; the heart does not cease to beat immediately after death.—*Amer. Journ. Med. Sci., July*, 1868, from *Archives de Physiologie Normale et Pathologique*, May–June, 1868.

DETECTION OF NITROGLYCERIN.

By A. Werber.

To detect nitroglycerin in cases of poisoning, the author proceeds in the following manner:—The organic material to be tested is extracted with ether or chloroform, the extraction mixed on a watch glass, with two or three drops of pure aniline, and evaporated upon the water-bath. A few drops of concentrated sulphuric acid are then added, when, if nitroglycerin is present, a purple coloration appears which changes to a dark green on dilution with water. As little as ·001 grain of nitroglycerin may thus be identified.—*Lond. Chem. News*, *July* 10, 1868, from (*Schmidt's Jahrb. d. ges. Med.*, 1867, and *Zeitschr. Analyt. Chem.*, vii, 158.)

CARBOLATE OF QUINIA.

Prof. Wenzel, remarks (*Jahrbücher der Gesammten Med.*, Aug. 28, 1867), that carbolic acid, which in solution acts as a poison upon the lower animal organisms, is borne in proportionate, though large doses, by the higher animals and man, when introduced into the body in a diluted state. It was administered to some animals with advantage in their food in England at the time of the rinderpest. With bases, even weak ones such as quinia, carbolic acid loses in a great degree its irritating properties at the point where it is applied; when combined in the proportion of two equivalents of the acid to one of quinia, the compound is characterized by a slight sharpness, and a decidedly bitter taste. Professor Bernatzik proposes a preparation composed in this manner, and he hopes that it will prove an energetic disinfectant for internal use. G. Braun has given it with benefit in puerperal diseases, and Duchek in several typhous cases, and in one of pyæmia. Pills containing 1 grain of quinia with ·6 of a grain of carbolic acid were given repeatedly without causing the slightest inconvenience, and according to these statements 3 to 6 grains of carbolic acid were given daily without injury. The compound was prepared by dissolving 60 parts of carbolic acid with 100 of quinia, in 300 of highly rectified spirit, filtering the solution, distilling and evaporating to the consistence of turpentine, and then mixing some extract of acorus and powdered cassia.—*Amer. Jour. Med. Sci.*, *July*, 1868.

PREPARATION OF LITMUS PAPER.

By A. Vacher.

I have had much trouble in obtaining a thoroughly satisfactory litmus paper. When used with blotting paper it is not as delicate as could be wished, and on one occasion, when attempting to make it with sized paper, the blue tincture persistently turned red when it touched the paper. The latter reaction seemed to be due to the sizing material, and it occurred to me that if I sized some paper myself with pure gelatin, my object would be obtained.

I can recommend the following receipt:

"Digest 20 grm. litmus with 100 c. c. water for some time, shaking occasionally; then filter. To the filtrate add a slight excess of nitric acid, and boil; then neutralize exactly with potash. Now make a weak solution of gelatin by boiling 1 part of isinglass with 50 parts of water; draw white blotting paper through this, and hang it up to dry. When dry, paint one side with the above solution of litmus.

20 Great Marlborough Street, May 30.

—*London Chem. News*, June 5, 1868.

ODORIFEROUS PRINCIPLE OF FLEUR DE GARANCE AND GARANCINE ALCOHOL.

It is a well known fact that when ground madder root is prepared into garancine, or fleur de garance, a saccharine liquor is obtained which, on fermentation and distillation, yields an alcohol which is contaminated with what, for years past, was considered to be methyl alcohol. More recent researches have brought out the fact that the peculiar odor of the alcohol obtained from the washing liquors of the garancine and fleur de garance works is due to acetic ether, and far more largely to aldehyd. The impure madder spirit, as ordinarily met with in trade, is an excellent source from which to prepare and obtain large quantities of aldehyd ammonia by the following method: From 20 to 30 litres of the impure spirit are placed in a distilling apparatus provided with a long metal (copper) worm, and heated to 60° or 70° C., while at the same time a rapid current of air, or carbonic acid, is passed over the liquid in the still; the distillation is continued until the distillate ceases to give with solution of caustic potash a darkish coloration. To the distillate twice its bulk of water is added, while in order to decompose the acetic ether, finely powdered hydrate of baryta is added, with continuous agitation of the liquid until a decided alkaline reaction sets in; the excess of baryta is removed by carbonic acid. The aldehyd is afterwards separated from the liquid by careful distillation on a water bath, and purified by combining it with ammonia. If the impure madder spirit is agitated with sodium amalgam, perfectly pure alcohol is obtained; since the aldehyd is by this means hydrogenized to alcohol, and the acetic ether is decomposed into alcohol, while acetate of soda is formed.—*Lond. Chem. News*, June 26, 1868.

THE CICADA SEPTENDECIM.

During this month, (August,) the Seventeen-year Locust, (*Cicada septendecim* of Linnæus) has disappeared, and only a few Harvest-flies, as the two other species we have are called, raise their shrill cry during the dog-days. But as this year has been marked by the appearance of vast swarms in the Middle States, we cannot do better than give a brief summary of its history, which we condense from Dr. Harris' work.

The Seventeen-year Locust ranges from South-eastern and Western Massachusetts to Louisiana. Of its distribution west of the Mississippi Valley we have no accurate knowledge. In Southern Massachusetts they appear in oak forests about the middle of June. After pairing, the female, by means of her powerful ovipositor, bores a hole obliquely to the pith, and lays therein from ten to twenty slender white eggs, which are arranged in pairs, somewhat like the grains on an ear of wheat, and implanted in the limb. She thus oviposits several times in a twig, and passes from one to another, until she has laid four or five hundred eggs. After this she soon dies. The eggs hatch in about two weeks, though some observers state that they do not hatch for from forty to over fifty days after being laid. The active grubs are provided with three pairs of legs. After leaving the egg they fall to the ground, burrow into it, seek the roots of plants whose juices they suck by means of their long beak. They sometimes attack the roots of fruit trees, such as the pear and apple. They live nearly seventeen years in the larva state, and then in the spring change to the pupa, which chiefly differs from the larva by having rudimentary wings. The damage the larvæ and pupæ do, then, consists in their sucking the sap from the roots of forest and, occasionally, fruit trees.

Regarding its appearance, Mr. L. B. Case writes us (June 15) from Richmond, Indiana: "Just now we are having a tremendous quantity of locusts in our forests and adjoining fields, and people are greatly alarmed by them; some say they are Egyptian locusts, etc. This morning they made a noise, in the woods about half a mile east of us, very much like the continuous sound of frogs in the early spring, or just before a storm at evening. It lasted from early in the morning until evening." Mr. V. T. Chambers writes us that it is abounding in the vicinity of Covington, Kentucky, "in common with a large portion of the Western country." He points out some variations in color from those described by Dr. Fitch, from New York, and states that those occurring in Kentucky are smaller than those of which the measurements are given by Dr. Fitch, and states that "these differences indicate that the groups, appearing in different parts of the country at intervals of seventeen years, are of different varieties." A careful comparison of large numbers collected from different broods, and different localities, and different years, would alone give the facts to decide this interesting point.

Regarding the question raised by Mr. Chambers, whether the sting of this insect is poisonous, and which he is inclined to believe to be in part true, we might say that naturalists generally believe it to be harmless. No hemiptera are known to be poisonous, that is, have a poison-gland connected with the sting like that of the bee, and careful dissections by the eminent French entomologist, Lacaze-Duthiers, of three European species of Cicada, have not revealed any poison apparatus at the base of the sting. Another proof that it does not pour poison into the wound made by the ovipositor is, that the twig thus pierced and wounded does not swell, as in the case of plants wounded by

Gall-flies, which secrete an irritating poison, giving rise to tumors of various shapes. Many insects sting without poisoning the wound; the bite of the mosquito, black-fly, flea, the bed-bug, and other hemipterous insects, are simply punctured wounds, and to a perfectly healthy constitution they are not poisonous, though they may grievously afflict many persons, causing the adjacent parts to swell, and in some weak constitutions induce severe sickness. Regarding this point, Mr. Chambers writes:

"I have heard—not through the papers—within a few days past of a child, within some twenty miles of this place, dying from the sting of a Cicada, but have not had an opportunity to inquire into the truth of the story, but the following you may rely on. A negro woman in the employment of A. V. Winston, Esq., at Burlington, Boone County, Ky., fifteen miles distant from here, went barefooted into his garden a few days since, and while there was stung or bitten in the foot by a Cicada. The foot immediately swelled to huge proportions, but by various applications the inflammation was allayed, and the woman recovered. Mr. Winston, who relates this, stands as high for intelligence and veracity as any one in this vicinity. I thought on first hearing the story, that probably the sting was by some other insect, but Mr. Winston says that he saw the Cicada. But perhaps this proves that the sting is *not* fatal; that depends on the subject. Some persons suffer terribly from the bite of a mosquito, while others scarcely feel them. The cuticle of a negro's foot is nearly impenetrable, and perhaps the sting would have been more dangerous in a more tender part."—*American Naturalist*, August, 1868.

ARE LOCUSTS POISONOUS?

We find a number of items in the newspapers this year claiming that locusts, their bite, sting, or eggs, are poisonous. In Georgia, it is stated that a young lady lost her life by rubbing her teeth with a twig (of *cornus Florida*, probably, as that is frequently done,) in which a locust had deposited its eggs. And somewhere in the west, fishes are said to have been poisoned by berries in which locusts had deposited their eggs, and which had fallen into a stream. And the following items we find in the papers:

— Locust eggs appear to be very deadly in their poisonous effects. A party of little boys were recently killed by eating mulberries in which they had been deposited, and so rapid was the work of the poison, that they died under the trees from which they took the berries.

— The death of a little girl at Kimmswick, Mo., resulting from the sting of a locust, is noted by the local papers.

Now, "e'en from our boyish days," in the south and southwest, we were familiar with all kinds of locusts, handled and played with them constantly, and knew other children to do the same, and the worst thing we ever knew or heard about them was their intolerable music. This idea of their being poisonous, is a new one to us—but, then, this is Presidential year, and it may be that the locusts have become innoculated with the "poison of politics," hence the trouble!

If, however, the locust is really poisonous, it should be known, and our readers will confer a favor by reporting their observations on the subject.—*Editor Med. Surg. Rep., Aug.*, 1868.

OBSERVATIONS ON FERRIC HYDRATE.

By Professor Attfield, Ph.D.

In a memoir, noticed in the Chemical News of June 12th as having been recently presented to the Academy of Sciences, M. Jeannel, in allusion to the fact that ferric hydrate is not always soluble in acids, states that the incomplete solubility is, in his opinion, generally due to the influence of traces of sulphates. He says, according to the Paris correspondent of the Chemical News, "sesquioxide, precipitated from the persulphate, is always to a certain extent insoluble, or yields unstable salts; the same is the case with the sesquioxide precipitated from the perchloride, when this has been contaminated by sulphuric acid, or equally when the alkalies employed as precipitants have been so contaminated, or, finally, when the ferric hydrate, precipitated from pure solutions by pure alkalies, has been washed with common water." This explanation does not accord with my experience of the properties of ferric hydrate and oxyhydrates. Firstly, in England the ferric citrates and tartrates used in medicine are successfully made in large quantities by dissolving ferric hydrate, prepared from ferric sulphate, in solutions of the respective acids and acid-salts. Secondly, I have frequently seen moist ferric hydrate perfectly dissolve in solutions of acids or acid-salts, even though the precipitate has been washed with common water containing sulphate of calcium,—a final washing with distilled water having, for various reasons, been neglected. Thirdly, I have often noticed that pure ferric hydrate, soluble when freshly precipitated, becomes imperfectly so if long kept, moist or dry. It is true that when alkali is added to solution of ferric sulphate, instead of the latter to the former, an insoluble oxysulphate is precipitated, and a similar compound may, possibly, be formed under other circumstances; but ferric hydrate, properly prepared and fairly washed, is readily soluble if only it be used in the moist and recently-precipitated condition, with a solution of acid or acid-salt which is not too weak, and the mixture be not boiled or even strongly heated for any considerable length of time. The fact is that ferric hydrate, even though kept under water, decomposes after a time, or more quickly if heated, losing the elements of water and becoming an oxyhydrate, a body insoluble in weak acids, and, also unlike ferric hydrate, incapable of acting as an antidote to arsenic, that is, incapable of forming ferrous arseniate.

It may be useful again to draw attention to the decided alteration in properties which ferric hydrate spontaneously undergoes when exposed beneath the surface of water* or when boiled with water, as evidence that this substance ($Fe_2 6HO$) is a true analogue of hydrate of sodium ($NaHO$), &c., and not a hydrous ferric oxide ($Fe_2O_3,3H_2O$). It is more reasonable to suppose that in acquiring new properties ferric hydrate becomes changed to new compounds than to consider that the changes result from the loss of a portion of water already existing as water. Between ferric hydrate ($Fe_2 6HO$) and ferric oxide (Fe_2O_3) there would appear to be several oxyhydrates, analyses, &c., of most of which have already been given in the Chemical News (xvii, 56) by Brush and Rodman.

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* [This fact was probably first noticed in April, 1842, in the American Journal of Pharmacy, by the Editor, and afterwards by Wittstein (*Buch. Repert.* xliii, 366.)]

1. $Fe_4\ 12HO$
2. $Fe_4O\ 10HO$
3. $Fe_4O_2\ 8HO$
4. $Fe_4O_3\ 6HO$
5. $Fe_4O_4\ 4HO$
6. $Fe_4O_5\ 2HO$
7. Fe_4O_6

In the above formulæ, No. 1 represents two molecules of ferric hydrate ; Church found a stalactite of true ferric hydrate, native, in Cornwall, and Wittstein gives a similar formula to fresh artificial ferric hydrate. No. 2 is the only oxyhydrate, in this series, still unknown, unless, indeed, Haughton's Kilbride mineral contains this body. No. 3 is brown iron ore from the Hüttenrode Hartz. No. 4 is the formula of a limonite and of artificial ferric hydrate altered by age—described by Wittstein as having a crystalline structure. No. 5 is the mineral gothite, and also the dried oxyhydrate commonly used in pharmacy. No. 6 is turgite, hydro-hæmatite, or the mineral from Salisbury, Conn., analyzed by Brush and Rodman. No. 7 represents two molecules of ferric oxide.—*Lond. Chem. News*, June 26, 1868.

CHEMICAL RESEARCHES ON SUGAR REFINING.

By M. Emile Monnier.

If sulphurous acid gas is conducted into a chamber containing coarse sugar, the latter is promptly bleached, and about three-fourths of the coloring matter are entirely destroyed, whilst the sugar undergoes no change whatever in composition. After this treatment the sugar smells strongly of sulphurous acid, which presents no inconvenience in the process of refining. To bleach sugar in this manner, for 1000 parts by weight of sugar about four parts of sulphur must be burnt, and the gas conducted into the chamber. When the operation is once set going, the proportion of sulphur may be notably diminished. The sulphur is converted into gas by combustion in a little furnace placed at the side of the chamber. When the action is complete, the sugar is dissolved in water, and its sulphurous acid neutralized by a small quantity of lime. This lime may be previously converted into sucrate of lime by M. Peligot's method, that is, by crushing it with a little syrup; for 1000 lbs. of sugar three or four pounds of lime are requisite in the form of sucrate.

M. Monnier has been at great trouble to ascertain whether the sulphurous acid gas thus used modified the sugar so as to produce a certain amount of grape or non-crystallizable sugar, and he has convinced himself that sugar bleached in this manner undergoes no change whatever. The quantity of non-crystallizable sugar found by analysis after the operation in question was, in each case, exactly equal to the amount which the sugar contained before being bleached: namely, on the average, about 2·15 per ct. In all these experiments the sugar was exposed about forty-eight hours to the bleaching action.

The above process gives most striking results with exotic sugars, which are highly colored; with lighter colored samples, the bleaching is not so marked; but in the former case, two-thirds to three-fourths of the heterogeneous coloring matters are eliminated completely.—*Lond. Chem. News*, May 15, 1868.

POISONING BY PHOSPHORUS.

M. Mialhe, having been lately engaged in a medico-legal investigation on a case of poisoning by phosphorus, was led during the experiments he performed, to alter his views in relation to the absorption of this substance. Until now he had thought the absorption of sulphur and phosphorus was solely due to the chemical action of the alkalies present in the intestinal juices. This investigation, the result of which he now details (*Union Méd.*, June 4), has convinced him that such absorption is especially due to the fatty matters contained in the alimentary substances. These fatty matters, after affecting the solution of the sulphur and phosphorus, serve as the vehicle for their introduction into the economy. It is even probable, at all events as regards phosphorus, that their absorption as a simple body is the general rule, absorption in consequence of chemical reaction being the exception. The proof that such is the case in poisoning by phosphorus is, that while abstinence and the taking emollient or acidulated drinks have apparently led to a cure, the ingestion of alimentary matters develops all the symptoms of poisoning, the patient usually dying. The phosphorus so absorbed may remain several days within the economy without undergoing any sensible change, its union with the fatty matters enabling it in great part to escape the action of the chemical agents with which it comes in contact, and to thus diffuse itself through all the living tissues in the same manner as poisons soluble in water. This explains why, when we perform the autopsy in the dark, of an animal that has been poisoned by phosphorus, its tissues give out the phosphorescent light and aliaceous smell. It also explains why some persons have been poisoned after eating the flesh of domestic animals, such as fowls or pigs, which have eaten phosphoric paste. We can, then, adopt M. Tardieu's statement that phosphorus is poisonous of itself, and acts only on the economy in a state of isolation and purity. The extremely poisonous character of phosphuretted hydrogen presents no objection to this theory, since instantly that this is introduced into the blood it gives rise to the production of water and the precipitation of phosphorus in a state of minute division eminently suited for the development of its deleterious action.

Two practical consequences are deducible from what precedes. First, in poisoning by phosphorus it is indispensable to expel this toxical agent as rapidly as possible from the economy by aid of acidulated laxative drinks, and to place the patient in a state of abstinence, or at all events prohibit his taking any food containing fatty matter; and secondly, that when phosphorus is administered therapeutically it is best to give it dissolved in a heated fatty body, which prevents its undergoing change, and insures its complete absorption. Acting in this way, we avoid entirely the local action of the phosphorus, which is not the case when it is prescribed dissolved in ether or chloroform. These two substances being soluble in a large quantity of water, the whole or part of the phosphorus is set at liberty by the alimentary fluids, and, becoming deposited on the mucous membrane, gives rise there to more or less inflammatory action.—*Med. Times and Gaz.*, June 13, 1868, in *Med. News*, Aug., 1868.

AN ATTEMPT TO ANSWER THE QUESTION: WHICH PART OF THE PLANT CONIUM MACULATUM IS THE BEST FOR MEDICINAL USE?

By Wm. Manlius Smith, M.D., Manlius, N. Y.

[Note.—Last year we published the statements of Dr. Harley, of London, in relation to the Conium of England, and it is but proper to give place to the report of Dr. Smith, who is a careful and qualified experimenter. It is to be regretted that a remedy so much used should be so variable. We have known two-grain pills of Tilden & Co.'s "Ext. Conii," U.S.P., to be returned because of their excessive activity, the patient supposing that an error had been made; and formerly, when illustrating the chemistry of Conium, we used a specimen of Thayer's fluid extract, as being particularly good. The great importance of uniformity in the strength of medicines of this class should cause manufacturers to carefully seek out all causes of variation, and avoid them. Immature plants, those that are too old, and those that have become altered by the fermentative action arising from the green plant lying in heaps, preparatory to pressing it. It is well known that most of the Conium used by the extract makers is of spontaneous growth, along roadsides and near dwellings, and that often many hours, if not a day or two, elapses between the gathering and pressing. Now it is quite probable that much of the conium may be more or less injured by this fermentation, according to the extent it has advanced; and as it is not probable that the injured plant is rejected, it is to be feared that much inferior Conium enters the preparations of commerce. Formerly, when alcohol was cheap, we believe Tilden & Co. used to sprinkle the recent herbs with it, with a view to retard decomposition. They formerly added alcohol to the marc before pressing, for similar reasons, and to favor the extraction of the juice. We do not know what the present custom is. So long as the business of making narcotic and other extracts from green plants is consigned to these large operators, it is very needful that they should use every precaution to guard against deteriorating causes.—Editor Am. J. Pharm.]

If we place any confidence in the maxim, "*Ubi virus, ibi virtus*," we should expect to find in Conium maculatum a valuable medicinal agent; for, since the days of Socrates, it has been known that the hemlock in efficient quantities is capable of destroying life. But if we are to judge of its value by the degree of use commonly made of it by medical men, we can assign it only an inferior rank in the materia medica.

If we reflect, however, that the disuse into which Conium has fallen may have arisen from the circumstance that the preparations of it attainable by physicians vary more in quality than those of most other medicinal substances, and that frequently these preparations are totally destitute of activity, we may think it worth our while to inquire if there is not some means by which such a degree of uniformity and stability can be given them as to render them worthy of the confidence and reliance of the medical profession.

It was with a view of fixing upon some good plan for securing this result, and also with the hope of adding, perhaps, something to the general stock of knowledge with regard to the therapeutic uses of the article, that the subject of Conium was accepted by the writer for examination. In the outset of the investigation, the fact presented itself that pharmacopœias differ as to the part of the plant recommended for medicinal use, the U. S. Pharmacopœia directing the leaves, and the British the fruits or seeds. From all that could be gathered from the ordinary treatises on materia medica, it would seem that the seeds are the most active, but how much more energetic is not specified.

The first thing in order, then, seemed to be to settle by some precise and accurate experiments the difference, if any, existing in different parts of the plant as respects their activity. As the medicinal efficacy of Conium is believed to reside in the alkaloid, or alkaloids existing in it, the method of ascertaining the comparative quantities of these alkaloids that are contained in different parts of the plant, presented itself as an available one for the purpose in view.

The plan adopted has been to make, as nearly as possible, precisely similar preparations from the leaves collected at two different stages of growth, and from the seeds at different degrees of maturity, and then by a delicate re-agent to test their comparative richness in the alkaloids. The re-agent used was that recommended by F. F. Mayer, in the American Journal of Pharmacy, vol. xxxv, p. 23, consisting of a dilute solution of iodide of potassium and corrosive sublimate in water. As comparative results only were aimed at, the following modification of the course of proceeding prescribed by Mayer was adopted: The various solutions to be tested were each diluted with carefully ascertained amounts of water, till but a faintly perceptible turbidity was produced on the addition of the test liquid, and the comparative strengths estimated by the amount of dilution that each solution admitted of.

The 30th of July, 1866, a quantity of leaves was collected from a Conium plant just fairly in flower. All withered and sickly looking portions, as well as the greater part of the petioles, both general and partial, having been rejected, four parcels of 500 grains each were accurately weighed out, and designated A^1, A^2, A^3 and A^4. Of these, A^3 and A^4 were each thoroughly bruised in a mortar for five minutes, and then transferred to a half pint bottle, and 1000 grains, by weight, of diluted alcohol added. The mortar was well cleansed and dried between each operation. Parcels A^1 and A^2 were placed to dry, thinly spread out on paper, in a darkened room, and occasionally turned. The bottles containing A^3 and A^4 were well stopped with corks, covered with thick paper and placed in a cellar.

The same day, the leaves were collected from other plants wholly out of flower, and having the fruits on the more mature umbels nearly, if not quite, full grown. These leaves, the same care being used to reject inferior portions, were likewise weighed into parcels of 500 grains each, and designated B^1, B^2, B^3 and B^4, and were treated exactly as the corresponding parcels designated A.

The fruits that appeared to be full grown were collected from the same plants that furnished the leaves designated B, by cutting off with scissors the umbellules entire. Four parcels of 500 grains each were made of them, designated C^1, C^2, C^3 and C^4, which were treated as parcels A and B had been.

The partly grown fruits from the same plants furnishing B and C, consisting of those which had but just dropped the flower, and those that were about half grown, situated, as they were, on the same umbellules, were collected, by cutting off the umbellules entire, and four parcels of 500 grains each made and treated as before. They were designated D^1, D^2, D^3 and D^4.

On the 3d of August those parcels that had been placed to dry were weighed, and on the 23d of August were weighed again. The weights being essentially the same in both instances, it was concluded that the drying process had reached its limit. The several parcels weighed as follows: A^1 113 grains, A^2 110 grains,

B^1 158 grains, B^2 159 grains, C^1 and C^2 each 183 grains, D^1 185¼ grains, and D^2 183 grains.

A^2 (that is, the dried leaves from the plant in full flower) was pounded in a mortar till the powder all passed through a sieve of 37 meshes to the linear inch. In this operation it lost four grains. The remaining 106 grains were placed in a half pint bottle, and 390 grains of water and 1000 grains of diluted alcohol added. The object of adding the water was to make the menstruum used, in effect, the same as that in which A^3 and A^4 had been put to macerate. Parcel A^1 was wrapped up, first in writing paper and then in thick brown paper, and laid on a shelf, for examination after a time sufficiently long to test its keeping properties.

B^2, or the leaves from the plants wholly out of flower, were treated in the same way that A^2 had been, except that 341 grains of water only were needed to supply that lost in the drying process. Parcel B^1 was treated as A^1, as were also C^1 and D^1. C^2, or the full grown but unripe and green fruits or seeds, was powdered till 160 grains passed through the sieve. The remainder, consisting mainly of pedicels, weighed 20 grains. Both the 160 grains of powder and the 20 grains of pedicels were placed in a half pint bottle, and 320 grains of water and 1000 grains of diluted alcohol added. D^2, or the full grown seeds, gave a weight in powder and pedicels of 177½ grains, and was treated with 320 grains of water and 1000 grains of diluted alcohol. All the bottles, as before, were wrapped in brown paper and placed in the cellar. There they remained till January 18th, 1867, when tinctures were made from each lot by percolation; a funnel, with the throat so obstructed with flax as to deliver a drop about once a minute, being used as a percolator. A^3 was first placed in the funnel, and diluted alcohol poured on till a little over four ounces of liquid had passed,—that is, till the four-ounce vial used as a receiver was filled to a mark on its neck. The tincture obtained was then transferred to the bottle in which the leaves had macerated, it having been thoroughly washed and dried—the exhausted matter removed from the funnel—the funnel well rinsed and wiped, and half an ounce of diluted alcohol passed through to rinse out the obstructing plug, before B^3 was introduced. In like manner B^3, C^3, D^3, and A^2, B^2, C^2 and D^2 were treated, the funnel being carefully cleansed between the percolations of the several parcels. The same amount of tincture was thus obtained from each, made, as nearly as possible, with the same menstruum.

In order to apply the re-agent selected, it was next necessary to get rid of the alcohol in the specimens to be tested. A certain definite and equal portion of each (20 cubic centimetres, or between 5 and 6 fluid drachms) was taken, the same amount of a watery solution of oxalic acid added to each portion of tincture taken, which was then evaporated by a gentle heat, not rising above 110° F., to approaching dryness. The residues were then diluted with water to the original volume of 20 c. c. each, and afterwards still further diluted, as occasion required, till they each were affected to the same faint degree of turbidity, by the application of the test liquid. It was found that the liquid from the leaves of the plant, just in full flower, admitted of a dilution with $1\frac{1}{2}$ times its volume of water. That from the leaves from the plant gone to seed bore but $\frac{1}{4}$ its volume of water; that from the full grown seeds required dilution with 7 volumes of water, and that from the immature seeds gave a perceptible turbidity with the test liquid when diluted with 8 times its volume of water, making the comparative strengths, in the active principle, as follows: $A_3=10$, $B_3=5$; $C_3=32$, and $D_3=36$. These experiments showed the partly grown fruits to be the most active portion of the plant. The tinctures made from the several parcels of leaves and seeds after drying, gave very unexpectedly the same figures, with the corresponding tinctures made from the undried specimens; from which results the inference was drawn that the method of drying adopted, had not dissipated any of the active principle.

Some full grown fruits, collected in August 1859, dried in a darkened room and kept in a paper package on a shelf, exposed to the ordinary changes of temperature, from changes in the seasons, were also examined. A quantity of them were powdered till they passed through the sieve of 37 meshes to the inch, and 177 grains of the powder, corresponding with the amount of powder of seeds used in the previous experiments taken, moistened with water acidulated with oxalic acid, placed in a conical percolator, and water poured on till the same amount of liquid was obtained, as in the previous experiments. This solution was found to bear dilution with 7 volumes of water before reaching the limit of perceptible reaction with the test liquid. This seems to indicate that the dried seeds retain their activity unimpaired for upwards of seven years. But it should be borne in mind that as the summers of 1859 and 1866 probably differed in temperature, so the plants grown in those years may have differed in their original content of the active alkaloids.

Specimens of Fluid Extract of Conium, (U.S.P.), (that is, of dried leaves), prepared by Dr. E. R. Squibb, and also of Fluid Extract of Conium Seed, prepared by the same hands from the dried, full grown, but green fruits, were also tested in the way narrated above, the same amounts, 20 c. c., being operated on. The results obtained were, that the oxalic solution prepared from the fluid extract of the leaves bore dilution with 32 volumes of water, while that from the fluid extract of the seed bore dilution with 224 volumes of water, making the seeds in this case seven times as strong as the leaves.

It may be a matter of interest to state further, that a Fluid Extract of Conium bearing the label of Tilden & Co., and one with the label of Henry Thayer & Co., were also tested in the same manner. By this method the solution from Tilden's extract bore dilution with but 2½ volumes of water, while that from Thayer's gave no reaction, even when undiluted. Some further investigation showed that this want of reaction was due, perhaps, to the presence of acetic acid, and so a modified form of the operation was tried with the three fluid extracts, i.e., Squibb's, Tilden's and Thayer's. The oxalic solutions obtained, 20 c. c. of the fluid extracts, were treated with solution of caustic soda till they gave decided alkaline reactions. They were then shaken in closed vials with about three times their bulk of ether, added in four successive portions, and the ethereal portion decanted and evaporated in contact with water acidulated with oxalic acid. The same bulks of etherial solution were obtained in each case, and the same amounts of the same strength of acidulated water used. The residues obtained were diluted to the same extent, and the farther dilution they would bear tested with the re-agent before mentioned. In this series of experiments, Squibb's fluid extract (of leaves) gave a solution bearing dilution with 20 times its volume of water, Tilden's 1½ times its volume, and Thayer's 4 times its volume, making the comparative strengths of Squibb's 42, Tilden's 5, and Thayer's 10.

Some fluid extract made from the fresh fruits of conium in 1854, in such a manner that a minim of the liquid represented a grain of the undried seeds, was also tested. The oxalic solution was found to bear dilution with 19 times its volume of water. If we suppose the seeds from which this preparation was made in 1854 to have been of equal strength with those gathered in 1866, it will follow that this preparation, after the lapse of 13 years, still retained about two-thirds of its original efficacy. But, of course no reliable inferences can be drawn from a mere supposition.

The only experiment yet made by the writer, in the investigation in progress, to test the therapeutic effects of the conium, consisted in his swallowing 16 minims of Squibb's fluid extract of conium seed, with a view of arriving at some idea of the suitable medicinal dose. The quantity mentioned, taken about five hours after breakfast, produced marked operative effects in about twenty minutes. The effects manifested were a peculiar sensation of heaviness in the eyelids and, as it seemed, some degree of ptosis, and a feeling akin to dizziness, that made it quite unpleasant to retain a sitting posture. There appeared to be no disposition to sleep produced. The effects were at their height in about an hour, and mainly passed away after the lapse of two hours from the time of taking the dose. A moderate meal had been eaten in the interval.

This experiment would indicate a suitable *commencing* dose of the fluid extract above mentioned, to be about five minims.

What appears to have been arrived at by the experiment narrated is this: That the immature fruits of conium are far preferable to the leaves, that they may be dried without serious injury, and that a very active preparation may be made from them. The further course of this investigation, it is designed to direct toward ascertaining, if possible, some of the causes producing the want of uniformity and stability desirable in the preparation of Conium, with a view of obviating them, if it may be, and also toward obtaining such experimental knowledge of the physiological and theurapeutic effects of the article in question as shall lead to additional practical applications of it.

MANLIUS, N. Y., *February* 4, 1867.

—*Trans. N. Y. State Med. Soc.*, 1867.

List of the Contributors to the Building Fund for the new Hall of the Philadelphia College of Pharmacy. (*Continued from Page* 377.)

Robert C. Brodie	$25 00	Wilson & Jones	$20 00
Tilden & Co., Lebanon, N.Y.	100 00		
Charles Ellis,	250 00	Since July	$605 00
Merrihew & Son	100 00	Previously	$4666 50
P. F. Lehlbach. N. Y.	10 00		
Edward Parrish	100 00	Total contributions	$5271 50

NOTICE.

American Pharmaceutical Association.

The sixteenth annual meeting of the American Pharmaceutical Association will be held in the city of Philadelphia, on the second Tuesday (the 8th day) of September, 1868, at 3 o'clock. P. M., at the new Hall of the College of Pharmacy, Tenth above Cherry Street.

It is confidently expected that the various standing committees through their chairmen, will be prepared in time to furnish the Association with full and highly instructive reports on the many interesting subjects which should occupy our earnest attention.

The objects of the Association and qualifications for membership are set forth in Articles I and II, Section I, of the Constitution.

Those desiring to join are requested to apply for blank applications to the Chairman of the Executive Committee, Thos. S. Wiegand, N. E. cor. 6th and Arch Sts., Philad., or to the Permanent Secretary, John M. Maisch, 1607 Ridge Avenue, Philad.

JOHN MILHAU, *President.*

New York, June 9th, 1868.

Exhibition connected with the 16th Annual Meeting of the American Pharmaceutical Association.

The Committee of Arrangements propose to have an exhibition of articles connected with the drug business, including chemicals, drugs, pharmaceutical preparations, apparatus, books, and miscellaneous articles. Those members of the Association and others wishing to contribute to the display will please address a note to William C. Bakes, 800 Arch St., chairman of the sub-committee on exhibition, stating the character of the articles they propose exhibiting. All articles should be delivered free of expense at the Hall of the Philadelphia College of Pharmacy, Tenth St. above Cherry, between the 1st and 5th of September, 1868.

Strangers arriving in Philadelphia to attend the meeting will find a committee of reception at the Continental Hotel, and information may be had from the Chairman and other members of the committee.

Alfred B. Taylor, 1015 Chestnut St.,
William Procter, Jr., 500 S. 9th St.,
Prof. Edward Parrish, 800 Arch St.,
James T. Shinn, Broad and Spruce Sts.,
Charles Bullock, 6th and Arch Sts.,
William C. Bakes, 800 Arch St.

Editorial Department.

Meeting of the Association.—The 8th of September is near at hand, and we look forward to a large gathering of the brethren in Pharmacy. There is every reason to believe that the Hall can be used for the purposes of the Convention. Let all come that can, and bring with them papers and subjects for discussion, and objects of interest for the exhibition. Those that can't come let them send a contribution in the form of papers or objects relating to pharmacy, so that we may have a good meeting, interesting to those present, and useful through the published proceedings to those who remain at home. It is the earnest wish of our College Members that all who get here may enjoy the visit and return home safely, profited by the occasion.

New Hall of Pharmacy.—Since our July issue, now about six weeks, very rapid progress has been made with the new Hall of the College of Pharmacy, and the lower rooms will be sufficiently completed in time to serve the purposes of the meeting of the American Pharmaceutical Association on the 8th of September. The Committee have urged on the work through the contractor, who has been indefatigable in his duties, and so far the weather has proved favorable. The Committee now feel the necessity of a more earnest action of the friends of the College at home and beyond our city in relation to the funds necessary to complete the building. The sale of the old building on Zane Street, though far short of the amount required, placed in the hands of the Committee a sum sufficient to encourage the hope that the deficiency could be supplied by the contributions of those interested in the profession and practice of Pharmacy, and its kindred pursuits. The readers of the *Journal* will perceive, by the published list for July and that in the present number, that many of the subscriptions have been paid, while many others who have subscribed to the object will be prepared to make payment before the close of the year. Notwithstanding this, however, we are informed by the Treasurer that ten thousand dollars will be required to enable the Committee to meet the contract for the building, besides the necessary furniture and apparatus to adapt it to the purpose intended. The cash on hand is now nearly exhausted, and the Committee who have the matter in charge would respectfully urge upon the contributors to forward to the Treasurer the amounts subscribed, and would also earnestly ask all interested in the progress of Pharmacy to lend their aid to the object, so that the Philadelphia College of Pharmacy may keep pace with kindred institutions, and reflect credit on the honorable profession which it is designed to foster.

We have been hoping that our .Graduates scattered over the country would feel disposed to remember their Alma Mater, and, without injuring their own interests, contribute materially to aid the Committee in meeting their engagements. The Treasurer recently received a contribution from a graduate of the College, in New York, accompanied by a note about as follows:—

"Enclosed please find a money order for ten dollars, as a contribution towards the building fund of the Old Alma Mater. If all her sons will remember the benefits they have derived from her, they will certainly be prompted to contribute their share towards her improvement.

A Graduate of 1863."

We also observe the names of our old friends Tilden & Co. on the list, and hoping that others at a distance will respond to the call and help the Committee onward, we leave the matter with our readers.

The American Journal of Pharmacy.—It is not often that we choose this text, being disposed to let the Journal get along on its own merits, but at this juncture we feel much impressed with the importance of what we are about to say. *First*, then, in reference to the scientific or professional support which should be contributed to its pages by the large number of members of the College and Graduates of the School of Pharmacy. Since the war the current of interest then turned aside from nearly all scientific objects has not returned to its old channels, and all seem engaged in the active pursuit of "business," without any disposition to step aside for a moment and record new ideas that may be suggested in the laboratory or at the dispensing counter for the benefit of the profession at large. We have never had so many subscribers as at present, and yet our list of active contributors is far too small. There are many respectable observers in our ranks whose observations would be very useful to their brethren, if published, yet who refrain from printing from a false idea of the importance of the subjects, together with an incorrect view of the length and style of the papers themselves. No matter how few words will convey the idea—half a page or a page will be acceptable, and will often contain more valuable facts than longer essays. Among the subjects just now which particularly appeal to all of us, and which very many may contribute to throw light upon, are the preparations of the Pharmacopœia, to be criticised with a view to the Revision of 1870, and the United States Dispensatory, which is now being revised. Notwithstanding the improvements embodied in the Pharmacopœia of 1860, there are many points which need retouching, and now is the time for suggestional criticism, to bring out as far as possible the real defects that may exist in that work. In regard to the Dispensatory, suggestions conceived in a friendly spirit, in reference to additions needed, or existing items requiring modification, would be kindly received.

The *second* point is, that the necessity we are under to "pay the printer," requires us to urge our delinquent subscribers to pay their dues. This Journal has never been conducted in the spirit of money making: for a large part of its existence it was self-supporting; but since the prices for paper and labor have permanently advanced, it has become a burthen to the College, to a small amount, mainly, however, because the dues are not regularly paid by many, and only at long intervals if at all by others. If our *contributors* would become more active our *subscribers* would have an additional inducement to be prompt.

PHYSICIANS PRESCRIPTIONS; THEIR REPETITION WITHOUT AUTHORITY, AND THE MUTUAL RELATIONS OF PHYSICIANS AND PHARMACEUTISTS.—Within a year or two past several of the medical journals have contained articles in relation to the renewal of prescriptions by apothecaries, written from various standpoints, and medical societies have passed resolutions bearing upon the subject, sometimes not couched in language calculated to promote the object in view. The functions of the physician and the pharmaceutist are distinct and should be kept separate, yet the more harmony of action that can be maintained between them the better for each and for the communities who are to receive their services. Our attention has been attracted to this subject by a letter, signed John Ordronaux, addressed to Dr. Shrady, Editor of the New York *Medical Record* for August 15th. When propositions like those of Prof. Ordronaux are offered as a remedy for the presumed ill effects of renewing prescriptions, there is but little hope of any such harmonious action. If it were possible for apothecaries to carry out the wishes of the Professor to the letter, it would produce a feeling of indignation in the community that would properly vent itself on physicians themselves when its nature become understood. That such a law, if enacted, should be carried out literally, without injury to the public interests, would require a regularity of action and a continuity of attention to business on the part of physicians, that would be almost superhuman. Such a law, to be effective, would have to be equally binding on physicians and apothecaries, and any ill consequences from the refusal of an apothecary to fill a prescription for an urgent case, for which the neglect or forgetfulness of a physician had left unprovided by "an order for renewal," would have to be borne by the physician. In fact, any legislator would be delinquent in duty to his constituents who did not frame the law so as to exact from the writer of a prescription made non-renewable an equal penalty for neglect of duty in case the patient suffered from the want of medicine thus withheld from him. We believe that measures such as those proposed by Prof. Ordronaux would be much better substituted by others tending to raise the educational status of the mass of both medical and pharmaceutical practitioners, by requiring a legal certificate of qualification from all persons engaged in the prescribing and dispensing of medicines. When a glance is taken over our large cities at the host of medical and pharmaceutical pretenders who flourish undisturbed in their abnormal functions, not to speak of the numerous instances of *authorized* practitioners in both professions whom nature never intended for the life and death responsibilities attendent on the prescribing and dispensing of medicines, we believe there are much more worthy objects for the reformatory action of our medical brethren, whether in their individual or collective capacity, than are embraced in the prevention of apothecaries from renewing their prescriptions for patients whom they are not willing to trust with the responsibility of obeying their directions. As regards the "proprietary right of physicians in their own prescriptions," we doubt the existence of any such right outside of the law of copy-right—which merely applies to publication. The moment a prescription is published to the world, the world will use it if valuable, and the only way to prevent this result is for the physician to relapse into the habits of his predecessor of the middle ages, and concoct in the secret recesses of *his own laboratory* the prescriptions for his patients, a fate to which we earnestly trust he may never be submitted, as it would sound the death knell to all liberalism in medicine and pharmacy. With these preliminary remarks we offer the Professor's letter in full, as well that our pharmaceutical brethren in New York should be advised of what is in store for them, should he convince the wise men of Albany of the value of his remedy, as because in the first part there is some really good advice to physicians regarding the manner of writing and issuing prescriptions, of which we cordially approve.

To the Editor of the Medical Record.

SIR—At the last meeting of the New York State Medical Society, Dr. John P. Gray, as President, called attention, in his introductory discourse, to the necessity of some legislation upon the subject of the indiscriminate sale of medicines by incompetent apothecaries; as also of drugs calculated to produce abortion, though advertised with an ironical caution against their use, intended to mask in a legal way their predetermined purpose. Of the wisdom and justice of Dr. Gray's suggestions none can entertain any doubt, nor does the subject deserve less consideration because of its frequent mention heretofore in various medical assemblages, both local as well as national. It is one which appeals to the best interests of society in the future, as well as in the present, and should be recognized by legislators as forming part of that great department of the common weal known as State Medicine. Whatever legal reforms may flow from such well-timed and apposite council as that given by the distinguished President of our State Medical Society, whether they be immediate or remote, all will agree that in the frequent ventilation of a great source of wrong-doing, other topics germane in character, if not of direct consanguinity, are invariably dragged into the light of observation, and placed beneath the eye of criticism, so as to secure ultimately some minor good in various directions, even though the parent evil should continue to resist the vigorous assaults of a scientific siege. It is through this law of association that the attention of the profession has of late been called to a great and growing evil committed by apothecaries, probably without intention of wrong doing, and yet militating seriously against the rights of medical practitioners, *in renewing prescriptions without permission of their authors first had and obtained.* The subject has been largely discussed in England ; and in our own Academy of Medicine has given occasion to the passage of some very significant resolutions. But, as something more than resolutions is needed to give a definite solution to the question, I venture to offer the following suggestions as the readiest road to a permanent remedy.

The wrong alluded to, though practically committed by the apothecary, has its foundation in a different cause than the mere pharmaceutical incompetency of, or the negligent disregard of another's rights by the dispenser of drugs. However true it may be, it is still painful to be compelled to admit that the blame should often be divided between the apothecary and the physician himself. And, as we pursue the inquiry, we shall see that the remedy has always lain within easy reach of the medical practitioner, who, having too often been negligent of duty to himself, expects another person, and in a different calling, to repair that negligence. Is this reasonable ? We think not. As a presumption in law founded upon the habitual conduct of rational beings, every man is supposed to be watchful of his own rights, whether those rights are associated with life, health, reputation, or property. But if he slumbers upon them, so as to invite, if not permit, another to encroach upon their limits, he cannot avoid dividing the responsibility for his own injury with him who may have been the instrument for inflicting it. That this is the view which should be taken, in most instances, of the subject-matter now under discussion, will appear by a more critical investigation of the principles underlying the tri-partite relations of physicians, patient, and apothecary. If it can be shown, as is easily demonstrable, that the physician, in giving a prescription, has a duty to discharge to himself, as well as to the patient who employs him, and that the apothecary, on his part, can no more re-issue a prescription without a renewed authority from the physician originating it, than he can give professional advice in his name, or use that name in any transaction of life, then the whole question will be resolved into a simple one touching the proprietary right of physicians in their own prescriptions. And, first of all,

WHAT IS A PRESCRIPTION ?

Counsel or advice, as given by a physician or lawyer, is, in the language of political economists, an immaterial product, which is consumed in its very production. Whether reduced to writing or not, it is the property of its author, and its *usufruct* may be sold to any one, though the right of property in the thing itself is not thereby dissevered from its original author. Now a prescription is professional advice in the nature of an order for the compounding of certain drugs intended to be used under specific conditions, and those only, viz.—*First, as to time ; second, as to individuals.* And in order to guarantee the good faith of the prescriber, *it should bear his name.* The specific conditions above recited form an implied contract between the physician and patient, consisting of two elements: first, that the prescription exhibits ordinary skill in its composition; and, second, that it is, according to the best judgment of the physician, suited to the necessities of a particular patient at a particular time. The unities of skill, present or contingent pathological necessity, coupled to individual wants, must all reveal themselves in the prescription. For, unless without a date, or without a patient's name, no prescription implies universality of use, or illimitability of time. Again, as the physician's reputation is involved as much in his prescriptions as in his treatment, of which they, in fact, form a part; and in case of a suit for malpractice, his ordinary skill will be tested no less by the one than the other, it is important that he should sign his prescriptions, since it is only in this way that their paternity can be verified. A patient has a right to refuse receiving a prescription from a physician who will not sign it; nor should an apothecary be allowed to compound an anonymous one. The refusal to sign, of itself, casts suspicion upon its merits, and practitioners should bear in mind that a man's reputation for judgment and self-reliance, as well as skill, may turn on precisely such trivialities as these. In reality, however, these are not trivialities, for they constitute safe-guards precisely as no one would accept a check unsigned, nor would the teller of a bank pay one, even though the drawer presented it himself. It is here that physicians too often neglect the first duty which they owe to themselves when prescribing, viz., that of investing the prescription with a character of scientific accuracy commensurate with their own, and a legal precision indicative of the responsibility they assume in issuing it. In the majority of instances, as all will testify, no signature is appended to a prescription, for let it be remembered that initials do not constitute a legal signature. Here is the first and fatal omission. Next, a date is rarely appended to a prescription, although no one would pretend that any prescription, however good to-day, is applicable to all time or circumstances, irrespective of a renewal by the physician after investigation of the patient's condition. And, lastly, the patient's name is not usually stated in it, thus omitting the most important evidence of its having been issued in favor of a particular person. Let any one who doubts this universal omission of self-protection on the part of physicians, step into any one of our large druggists and examine their prescription book, and he will acknowledge that we have not overstated the facts. Under these circumstances, therefore, and since prescriptions are so often signed by initials alone, which are equivalent to no signature; without date, which limits them to no time; and without name of person, which restricts them to no individual in particular, why blame a druggist for renewing a prescription, or even originally compounding it, since he may never have seen the prescription before, and cannot be presumed to know that it had previously been compounded? Why blame him exclusively?

The perfunctory way in which too many physicians write their prescriptions, is the fertile source of the evil so greatly complained of; and whenever, with a better and more realizing sense of the responsibility attached to the art of prescribing, practitioners shall ennoble their orders upon druggists, by giving them at least as much legal accuracy as belongs to an order upon a grocer, the opportunity and the disposition to renew prescriptions without authority by druggists, will both disappear.

In order to promote such a reform, let our stationers publish for the use of physicians blank-books like check-books, printed in some such form as this:

Prescription No —— For Mr. ——— ——— Dated…. …. …186 . Renewed……………… do ……………… do …. … .. .	Prescription No. —— N. Y……………. . …. 186 . For Mr. ——— ——— R,…………………… …………………… …………………… …………………… ……………………R. Galen, M. D. Renewable……186 . do ………186 . do ………186 .

RELATIONS OF APOTHECARIES TO PHYSICIANS.

An apothecary is simply a vender of drugs, whether he compounds them personally or not; and at law he stands upon the same footing as any retailer of goods, except where, on account of the peculiar character of his commodities, and their relations to human life or the public health, special statutes restrict him in the manner of their sale. As to a prescription, it is plain at the outset, that the apothecary cannot retain it without the patient's permission, though he may copy it, if he please, as a voucher of the articles dispensed by him in obedience to its term; otherwise, and in cases of error in compounding prescriptions, it would be difficult to trace the delinquent. The apothecary being responsible for want of skill in his art, as well as the physician, should exercise equal caution in compounding, as the latter is required to do in prescribing, drugs. Hence it is not only proper, but his duty also, to keep a copy of every prescription, with date and names of physician and patient. Or, if he will not do this, then some law should be passed requiring apothecaries to keep a cancelling stamp to be struck upon every prescription compounded by them, under a penalty for each omission. This stamp, like those used in post-offices, might be of any form (or writing might be used alone), and contain name of apothecary and date of compounding; and without mutilating or defacing a prescription, would thus simply record upon it two important facts in its history. The same law should contain a second clause, forbidding any apothecary to renew a prescription once cancelled, without a fresh signature from the physician originally issuing it. Now, if the physician thinks the patient may need the same prescription a second time, let him fill out the blank space headed "renewable"—with either the words "at pleasure of Mr. ———, and upon his order," thus throwing the future responsibility for its use upon the patient, or limit the renewal to some particular date, as in the first issue. But where, as is now so commonly the case, the physician neither signs his name, nor affixes any date or the name of any patient to his prescription, there seems to be no valid reason why the apothecary should not renew it just as often as it is called for. Like a bank bill thrown into the street, it is good in any one's hands who picks it up. If the physician's name be not attached to it, it is not his property, for he can claim no exclusive property in drugs, as drugs, but only in the formula which he has designed for a particular occasion. And if he does not patent it, as no respectable physician will, and as no respectable government should permit, then he cannot legally prevent any one from using it, who simply uses the prescription *without his name.* Dr. Squibb, for example, can undoubtedly enjoin any one from manufacturing and selling his Diarrhœa Mixture under his name *without permission*, for his name is his *trade-mark;* but he cannot prevent any pharmaceutical pirate from manufacturing and selling it, under the name of Smith's Intestinal Anodyne, or Great Sympathetic Restorer

And if Dr. Dover, or Dr. James, or Dr. Lugol, had chosen to manufacture the celebrated compounds which bear their names, no one could have sold them under their names without permission, though any one could use their formulæ, wherever unpatented, under any other name—since there can be no exclusive property in that which has once become the common possession of mankind; and this principle may be predicated in relation to nearly the whole pharmacopœia. With such a statute in existence as has been foreshadowed, no apothecary could renew, without authority, any physician's prescription; for, if he did, he would incur the penalty specially affixed to such misconduct. On the other hand, I am aware that many physicians would look upon the prescription book as an unnecessary piece of formalism, and like the ceremonial law, calculated to increase rather than diminish professional cares; but if they would consider it in its proper light of a legal guarantee of their professional competency, able to be of immense advantage to them as evidence, in some moment of supreme necessity, they would no longer hesitate as to its acceptance, nor have occasion to complain that some remedy was not within their reach.

In conclusion, and to add some legal artillery to this army of suggestions, I would recommend that our State Medical Society request of the next Legislature the passage of some such act as the following, viz:

Be it enacted, etc., etc.:

1. No apothecary, druggist, or retailer of medicines, shall compound any written prescription, unless it be signed with the full name and address of the person writing the same, under a penalty of —— dollars, for each and every violation of this prohibition.

2. Every apothecary, druggist, or retailer of medicines, who shall compound any written prescription, shall, immediately thereafter, and on the same day, write or stamp on said prescription, in legible characters, the date of such compounding, together with his own name and place of business, under a penalty of —— dollars for each and every omission so to do.

3. Any apothecary, druggist, or retailer of medicines, who shall compound a written prescription, bearing upon its face the certificate of an apothecary showing the same to have been already compounded, and without a renewal of said prescription by the person originally writing the same, duly expressed by a fresh signature and date, shall be chargeable with a misdemeanor, and on conviction thereof, shall be subject to a fine of fifty dollars for each and every offence so committed.

4. All fines and penalties incurred under this act may be recovered in a Justice's Court, one-half to go to the informer, and one-half to the Overseers of the Poor of the county in which such conviction shall be had.

I am, very respectfully, yours, John Ordronaux.
Roslyn, N. Y., July 23, 1868.

Ether Monument.—The late Thomas Lee, of Boston, wishing to commemorate the discovery of the anæsthetic use of Ether in Boston, during his life conceived the idea of erecting a granite monument for that purpose. On the 28th of July, Dr. Henry J. Bigelow formally presented the completed structure to the Mayor of Boston in a set speech, which is printed in full in the *Boston Medical and Surgical Journal* for July 2d. "The monument is of white Concord granite, 30 feet high, and arises from a square basin. Its base is cubical, leaving on each vertical face a niche containing a spouting lion's head with sculptured water lilies and other aquatic plants. Upon this base or plinth rests a surbase adorned with mouldings, from which arises a die bearing upon each of its four sides an inscription surmounted by a bas relief in marble. These are sunk in the tympana of four pointed and cuspidated arches, supported each by two stunted shafts of Gloucester red granite, the capitals of which are enriched by poppies and oak leaves, which decoration is carried around the monument on the same level in a band or string course." From this point the structure diminishes rapidly in diameter by a series of mouldings to a base, from which arises a shaft of polished red granite with a decorated capital, the sculpture of which is intended to symbolize the relief of suffering. The first inscription is as follows:

"To commemorate the discovery that the inhalation of Ether causes insensibility to pain. First proved to the world at the Mass. General Hospital, in Boston, October, A. D. MDCCCXLVI."

Two of the inscriptions are scriptural, and the fourth states that the monument was erected by a citizen of Boston in gratitude for the relief of human suffering by the inhaling of Ether. No reference is made to the individuals who have been before the public with the claims of discoverers. Death has just removed the most zealous of these, Dr. Morton (see page 480), and when time has developed the true verdict, we doubt not that justice will be rendered where it is due.

New Filtering Apparatus.—Messrs. Hance, Griffith & Co., of Philadelphia, have sent us a new arrangement made of glass, which they call "a non-wasting percolating and filtering apparatus." E. H. Hance, the designer, says it is intended to prevent the wasteful and injurious exposure which too frequently occurs in conducting the processes referred to in its title. The arrangement consists of an outer, cylindrical, glass vessel or reservoir, furnished with a faucet below, and having the rim expanded so as to form a shoulder within, above which the rim rises about an inch. This rim is ground perfectly flat on top so as to form an airtight joint with the lid or cover, which has a flat surface to fit it, but unfortunately no flange to prevent it from slipping off. When used for percolation there is a second cylinder of glass with a projecting rim to rest on the shoulder of the reservoir. The lower end has a beaded edge, so that a piece of cloth or filtering tissue may be tied securely over it as a diaphragm. When used for filtering, the funnel is supported by its upper edge resting on the shoulder of the reservoir; in either case the filtered liquid is caught in the reservoir and may be drawn off from time to time by the faucet. The whole is so simple in its action that it needs no explanation, it being merely the suspension of a filter in a close vessel. There are two points in connection with it that suggest a criticism, viz: The easily displaced cover, the loss or fracture of which destroys the usefulness of the whole apparatus; and the metallic faucet. The former may be replaced by a piece of plate glass, and the latter by a gum elastic tube with a compress stop—or, if expense is no object, a glass faucet in cases where the metal is objectionable, or a cork may be substituted for both. (See wood-cut in advertisement sheet.)

British Pharmaceutical Conference.—The official call of the fifth annual meeting of this body, to convene at Norwich, under the Presidency of Daniel Hanbury, F. R. S., will have taken place before this number is issued. Its results will probably reach us in time for our next, and will be awaited with interest.

The Pharmacist, a quarterly journal proposed to be issued by the Chicago College of Pharmacy. Our Chicago brethren appear to be in good earnest, and have issued a prospectus soliciting advertisements, to which they look for support to their journal during its infancy. The editorial services to be gratuitous. The publishing committee consists of E. H. Sargent, Thos. Whitfield. Henry Biroth, John W. Ehrman, James W. Mill, Albert E. Ebert and N. Gray Bartlett. The first number will be issued on the first of September, 1868, and will be sent to every druggist in the north-western States. There is no reason why this enterprise should not be successful, unless it be apathy on the part of those who should support it. There are enough able pharmaceutists in Chicago to carry it forward, and it may be the means of eliciting some valuable brain work from many who are indisposed to contribute to distant journals. Presuming that the committee intend to conduct the work in accordance with good ethics, they have our cordial wishes for their success.

Half-yearly Compendium of Medical Science, Part 2*d*, 1868. A synopsis of the American and foreign literature of Medicine, Surgery, and the Collateral Sciences for six months. Edited by S. W. Butler, M. D., and D. G. Brinton, M. D. Part 2d, July, 1868. Philadelphia, S. W. Butler, M. D., 115 South 7th st.: pp. 351, octavo.

This work, received just as we are printing our last form, is an enterprize commencing with the present year, and of which this is the second number. It appears to be well selected and condensed. It contains about 420 separate articles, of which 191 were by American authors and 212 of foreign writers. As the Compendium is an original compilation, and includes a much larger proportion of American papers than those similar works which are reprinted from foreign editions, it claims to deserve the support of the medical profession. It is well printed and is priced at three dollars per annum.

Announcement of the Annual Courses of Instruction in the Philadelphia College of Pharmacy, 1868–9, with terms and conditions of graduation. Philadelphia, 1868.

The reception of this pamphlet reminds us of the approaching season of study which will be opened in the new Hall in October next, under the auspices of the College Professors, Bridges, Parrish, and Maisch. It is not expected that the practical laboratory can be organized this season, but it will be urged on to as early a period as possible consistent with its proper arrangement. The details of this branch of instruction, as it is proposed to carry it on, are too important to be hastily established.

The family Adviser and Guide to the Medicine Chest. A concise handbook of domestic medicine. By Dr. Henry Hartshorne. Philadelphia, John Wyeth & Brother, 1412 Walnut street, 1868; pp. 104, 12 mo.

An examination of this little volume leads us to view it as one of the best companions to the medicine chest that has been published, and has the great merit of giving much information in a few words. The plan of the book is simple. It begins, in part I, by answering the question for what purposes medicines are employed—as to relieve pain, to give sleep, to reduce fever, to quiet cough, &c.—and enumerates some of the important diseases, accidents or poisoning, etc. Part II replies to the query "what is the matter," in a few general directions regarding symptoms. Part III succinctly notices the principal medicines proper for popular use. Part IV is a chapter on dietetics, and part V the management of the sick room. As the book is written by a judicious practicing physician, it is free from many objectionable features that are sometimes found in works on "Domestic Medicine." The volume is convenient in size for the traveller, and is neatly printed and well bound.

Dental Materia Medica, compiled by James W. White, Philadelphia. Published by Samuel S. White, 1868; pp. 108, 24 mo.

This neatly gotten-up little volume is intended to give information in relation to the medicines and agents used and prescribed by dentists. The writer expressly avoids entering upon the botanical and chemical history of his subjects, and confines himself to the purposes and methods of using, and does not give many formulæ for manufacturing preparations as in pharmaceutical works. One-fifth of the pages relate to anæsthetics, general and local but caution the readers in relation to their too frequent use. By permission of the publishers we have copied the article on Nitrous Oxide, at page 408, to which the reader is referred.

Thèse de Pharmacie présentée et soutenue a l'école supérieure de Pharmacie, par Armand Fumouze, Docteur en Médicine. Pharmacien de 1re Classe. *De la Cantharide Officinale.* Paris chez Germer Bailliere, 1867: pp. 58, quarto, with four engraved plates.

From E. Fougera, New York. This work on cantharides appears to be very thorough and complete in all its parts, as regards the commercial, natural, and chemical history of the cantharis. and the insects which attack it. We have before published his method of isolating cantharidin by the consecutive action of chloroform on sulphuret of carbon (see page 116 of volume), and in a future number will give a further notice, which the lateness of its reception prevents us from giving now.

Materia Medica. By John B. Biddle, M.D., Prof. Mat. Med. in Jefferson Medical College, &c. Third Edition, enlarged. Phila., Lindsay and Blackiston; 1868, pp. 384, octavo.

Students who are engaged in the arduous task of following the numerous studies embraced in our first medical schools, especially when aiming at the diploma after a second term, desire to have the subjects presented to them in a form favorable to easy grasping, by avoiding many details found in the large treatises. Dr. Biddle's work comes under this category and forms the text-book of his class. The nomenclature is strictly that of the Pharmacopœia, which is constantly recognized and referred to in the course of the work. In this edition a number of new remedies and methods are introduced and the work brought up to the present time. Particular attention has been given to the doses and therapeutic uses, and our indigenous remedies quite numerously noticed. The book, very well printed on good paper and substantially bound in muslin with thick cover, is highly creditable to the publishers. Price four dollars.

Lessons in Elementary Chemistry, inorganic and organic, by Henry E. Roscoe, B. A., F.R.S., Prof. of Chem., in Owens College, Manchester. New York, W. Wood & Co., publishers, 61 Walker street; 1868, pp. 383, 12 mo.

This is a reprint, without additions, of Prof. Roscoe's work. The author has "endeavored to arrange the most important facts and principles of modern chemistry in a plain but precise and scientific form, suited to the present requirements of elementary instruction." The new views in reference to nomenclature and symbols have been adopted, and the ultra modern forms of expression used. The next remarkable fact in connection with the book is the adoption of the metrical system of weights and measures, and the centigrade scale for temperature, and hence it is one of the pioneer instances of the adoption of this system to the exclusion of English Weights and Fahrenheit's scale. A series of questions are appended which adapts the book to college classes. The book is gotten up in English style, and appears to have been carefully printed. We have had no opportunity to compare it with the original edition. Price $1.50.

Report of the Board of Managers of the Pennsylvania Hospital to the Contributors at their annual meeting, held 5th mo., 4th, 1868, *together with the accounts of the Treasurer and Stewards.* Philadelphia, pp. 49, octavo.

This report is full of interest to the public. The Pennsylvania Hospital is a great and useful charity, valued by our citizens and appreciated by many at a distance who have learned of its Good-Samaritan influence in the gratuitous relief of suffering by accident in a wide circle around its location. Many citizens have given liberally to the general fund; among these the Managers especially mention Asa Whitney & Sons' contribution of $10,000. The medical corps of the hospital are greatly in need of a new lecture and operating room for the use of the Surgeons, and subscriptions are now being received to forward the work which has been commenced. 1787 patients were treated the past year, of whom 740 were natives and the remainder of foreign birth. The whole number of patients of all kinds from the foundation of the Hospital is 86,428.

Half-yearly abstract of the Medical Sciences ; being a digest of British and Continental Medicine, and of the progress of medicine and the collateral sciences. Vol. xlvii. Jan.—July, 1868, pp. 291. Philadelphia, Henry C. Lea.

Braithwaite's Retrospect of Practical Medicine and Surgery ; part lvii. July American edition. W. A. Townsend and Adams, 434 Browne street, New Yoak.

We acknowledge the reception of these valuable semi-annual visitors from the publishers, and find them full of useful and interesting matters gleaned from the Journals and transactions of Societies and arranged in order for ready use, with index. Each $2.50 a year in advance, or $1.50 for each part.

Uniform Trade-list Circular.—Devoted to the interests of publishers, booksellers, news dealers, stationers, &c. Published by Howard Challen, 1308 Chestnut Street, Philadelphia. Nos. 9 and 10, vol. 2. From the publisher.

The Monthly Medical Reprint.—A reproduction of the most valuable articles published in the latest issues of the principal British Medical Journals. Five dollars per annum ; royal octavo, double column, 64 pages per number. New York, John Hillyer, 14 South William st.

OBITUARY.

PROF. JOHN MILLINGTON, an eminent chemist and practical miner, died at Richmond, Va., on the 10th instant, aged eighty-nine. He was a native of London, and an associate of McAdam, whose name is immortalized by his process of macadamizing. He formerly was occupied at the Royal Institution during the period of Sir Humphrey Davy's administration. Mr. Millington lived in Mexico several years, and engaged in the mining business. Subsequently he became Professor of Chemistry in old William and Mary College, in Virginia, and filled that chair with great acceptance for twelve years. Afterward he became Professor of Chemistry and Geology in the University of Mississippi. At a ripe old age he retired to private life, and for several years he resided in Philadelphia.

PROF. MATTEUCCI died on the 28th of June, at Florence, Italy, after a short illness. We learn from the Chemical News, that "the deceased was an Italian Senator and Minister of Public Instruction, in which capacity he was very active in promoting the extension of Education. He was better known as a man of science than as politician or a minister. He received in 1844, for his investigations in Electro-Physiology, the prizes of the French Academy and the Copley medal of the Royal Society. He was the author of various published works on electrical subjects.

PROF. CHARLES G. PAGE died on the 5th of May at Washington, of a lingering illness. He was connected with the Patent Office as Examiner of Patents for Philosophical instruments, involving mathematical and scientific knowledge, and was himself the author of many important discoveries in electro-magnetism, among which was an electro-magnetic locomotive, which, however, was never perfected.

NATHANIEL BAGSHAW WARD, F.R.S., and author of the so-called "Wardian cases," died on the fourth of June, at London, aged 77. Mr. Ward was born at Plaistow, in Essex, where his father was a medical practitioner, and where he pursued the study of botany whilst an assistant in his father's office, under circumstances reflecting great credit on his energy and perseverance. The discovery of the close glass cases, which have chiefly been the cause of his reputation in botany, was made while practicing medicine in London, and the great value to science and horticulture of this method of transporting plants from tropical countries is justly estimated by the world. The editors of the Pharmaceutical Journal state that he resided at "Clapham Rise," where his garden, rich in exotics, was open to rich and poor to visit, and nothing delighted him more than to expatiate on the properties and history of his pets. Mr. Ward was an old member of the Apothecaries Company, and lately its Treasurer, and he was also a friend to the Pharmaceutical Society. For a more extended notice of Mr. Ward, the reader is referred to the Pharmaceutical Journal for July.

WILLIAM T. G. MORTON.—On July 15, Dr. William T. G. Morton, of Boston, died suddenly in New York city. He was at the time driving out to Central Park, with his wife. As he was passing Luff's Hotel, he fell forward in the carriage without any premonition. His wife screamed, and several persons who were near, among whom were Dr. Swan and several other physicians, and officer Thompson of the Twelfth Precinct, hastened to the spot, and found Dr. Morton in a dying condition. It was first supposed to be the effects of the heat, but the physicians soon announced it a case of apoplexy, and advised his speedy removal to St. Luke's Hospital. The deceased achieved considerable reputation in the medical world, while living, by claiming to be the first to introduce ether as an anæsthetic in the amputation of limbs and other surgical operations. He had been ill for some time, and recently arrived in New York, from Boston, with his wife.—*Med. and Surg. Reporter, Aug.* 1.

THE

AMERICAN JOURNAL OF PHARMACY.

NOVEMBER, 1868.

MINUTES OF THE SIXTEENTH ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1868.

The Sixteenth Annual Meeting of the American Pharmaceutical Association met in the City of Philadelphia, at the new Hall of the Philadelphia College of Pharmacy, on Tuesday, September the 8th. First Vice President, Robert J. Brown, of Leavenworth, Kansas, in the Chair; Prof. John M. Maisch, Secretary.

On taking the Chair, Mr. Brown informed the meeting that the President, Mr. John Milhau, of New York, was unable to attend this meeting in consequence of impaired health.

The Chairman appointed as a committee to examine credentials, Messrs. Stearns, of Detroit, Parrish, of Philadelphia, and Moore of Baltimore. After a short recess, during which members present registered their names, this Committee reported the following gentlemen duly accredited as delegates to this meeting:—

From the Massachusetts College of Pharmacy.—Ashel Boyden, John Buck, George F. H. Markoe, Charles A. Tufts, Henry W. Lincoln.

From the College of Pharmacy of New York.—George C. Close, Ferd. F. Mayer, William Wright, Jr., Isaac Coddington, F. V. Heydenreich.

From the Maryland College of Pharmacy.—J. Faris Moore, E. Walton Russell, Charles Dohme, William Elliott and J. F. Hancock.

From the Philadelphia College of Pharmacy.—Prof. Robert Bridges, Dr. W. H. Pile, William B. Webb, Thomas S. Wiegand and Caleb H. Needles.

From the Chicago College of Pharmacy.—Robert J. Brown, Louis Strehl, Dr. F. Mahla, Henry W. Fuller, and Albert E. Ebert.

Alumni Association of the Philadelphia College of Pharmacy.—David Preston, Charles W. Riley, Howard England, Henry C. Blair, and H. T. Peck.

From the Montreal Chemists' Association.—Nathan Mercer and Dr. J. Baker Edwards.

No delegations had been accredited from the Pharmaceutical Associations and Colleges of Maine, District of Columbia, Cincinnati and St. Louis.

Mr. Wiegand, Chairman of the Executive Committee, now proposed the names of the following gentlemen as candidates for membership in the Association, they having complied with the terms of the Constitution :

Aurick S. Brackett, Knoxville, Tenn.
George G. Percival, Phila.
Clemmons Parrish, Phila.
John T. Buck, Jackson, Miss.
David L. Smith, Virginia, Nevada.
A. B. Clark, Jr., Galesburg, Ill.
Andreas Valdemar Bugge, St. Joseph, Missouri.
Graham Wilder, Louisville, Ky.
N. C. Pettis, Great Barrington, Mass.
Alex. A. Green, Aurora, Nevada.
Charles A. Weidemann, Phila.
Hermann A. Vogelbach, Phila.
Allen Shryock, Phila.
John S. Erben, Phila.
James B. Cherry, Pittsburgh, Pa.
John W. Von Nieda, North Danville, Pa.
Charles W. Hancock, Phila.
William Fletcher Muchmore, Madison, N. J.
William S. Voorhees, Morristown, N. J.
Roger Keys, Phila.
William E. Van Orsdel, Phila.
Charles H. Cressler, Chambersburg, Pa.
William Taylor, Phila.
F. Kern, Louisville, Ky.
Theo. Tapken, Greenpoint, N. Y.
Pratt R. Hoagland, Boston, Mass.
J. Thornton Weaver, Phila.
James H. Richardson, Cambridgeport, Mass.
Chauncy B. Littlefield, Boston, Mass.
Ezra W. Arnold, Charlestown, Mass.
Frederick A. Tilge, Phila.
Judson R. Cheney, Boston, Mass.

A ballot being ordered, the Chair appointed Prof. Parrish and Charles A. Heinitsh as tellers, who reported the unanimous election of the candidates.

The roll of members present was then called by the Secretary, numbering 131.

The Reports of Committees being called for, the following were presented and laid upon the table for future action :

The Report of the Executive Committee.
" " of the Permanent Secretary.
" " on the Progress of Pharmacy.
" " on the Drug Market.
" " of the Pharmacopœia Committee.
" " on the Legislation regulating the practice of Pharmacy.

The report of the Committee on Queries and the Treasurer's Report were brought up later in the sessions.

The report of the Executive Committee was now read by Mr. Wiegand, and the supplementary report by the permanent Secretary, both of which were referred for publication.

From the Executive Committee we learn that the 15th volume of proceedings of this Association was issued about the middle of December, which, though earlier than usual, would have been anticipated several weeks, but for the illness of Mr. Slade, the phonographer, whose reports have added so much to the interest and value of our publications, and to whose skill and courtesy the Committee bear a warm testimony.

The total expense of printing and publishing the proceedings, blanks, constitutions, &c., amount to about $1500, which has all been paid by checks from the Treasurer.

The Committee also bear testimony to the great labor occasioned to the Treasurer by want of promptness in responding to his circulars, which besides greatly delays the payment of the debts of the Association.

"As the growth of our Association among those who feel an interest in the true progress of pharmaceutical science is desirable, all who are thus anxious to advance our profession to its proper position, are earnestly invited to connect themselves with us; every facility for so doing will be furnished by the Permanent Secretary or Chairman of the Executive Committee."

The report announces the death of three members of the Association during the past year, viz:

R. W. Stevens, of Great Falls, N. H., died May, 1868.

Ray B. Esterbrook, of New York, died April 27, 1868.

Henry F. Fish, formerly of Waterbury, Connecticut, and one of the oldest members, died in New York in August.

R. C. Kennedy, of Cleveland, Ohio, died August 7, 1868.

The latter was drowned in Lake Erie by the upsetting of a sail boat. He was a graduate of the N. Y. College of Pharmacy, and was highly esteemed by those among whom his lot was cast.

The Committee request that all members who have knowledge of the decease of any others of our now numerous membership, will advise the Chairman of this Committee of the time, place, and circumstances as far as proper, that they may be duly recorded. This is the more necessary as the widely spread range over which they extend makes it a difficult task to gain information in many neighborhoods.

The appointment of the Committee to nominate officers for the ensuing year being in order, the Delegations present appointed the following members to serve on that duty, viz :

Massachusetts College, . . .	Ashel Boyden.
New York College, . . .	George C. Close.
Philadelphia College, . . .	Dr. W. H. Pile.
Maryland College, . . .	Prof. J. Faris Moore.
Chicago College, ...	Louis Strehl.
Alumni Association, . . .	H. T. Peck.
Montreal Association, . . .	Nathan Mercer.
By the Chairman from the members at large not represented by delegations.	Dr. Thomas E. Jenkins, Louisville, Ky. Robert O. Sweeney, St. Paul, Minn. James T. King, M.D., Middletown, N.Y.

The voluminous report of Mr. Diehl, Chairman of the Committee on the Progress of Pharmacy, being called up, the Permanent Secretary read extracts from the document as usual, when, on motion, it was accepted and referred for publication.

This document appears to have been prepared with care, and has involved so much labor and time that the Chairman declined serving another year, which is the more to be regretted as he has been very industrious and useful in this service.

Dr. Squibb, Chairman of the Pharmacopœia Committee, read the report of this Committee, which was on motion accepted and referred for publication, viz :

MR. PRESIDENT : Your Permanent Committee on the Pharmacopœia, consisting of W. Procter, Jr., A. B. Taylor, and the undersigned, appointed at the Annual Meeting of 1863, for purposes given in the minutes of the 11th Annual Meeting, (see proceedings of 1863, page 42), begs leave to report that the members have not been unmindful of the important duty with which they were intrusted, and have collected much information which may become useful at the next revision of the Pharmacopœia. As the time for the next revision approaches, a question arises in your Committee as to how to prepare and present what may have been done. All the members of this Committee are fully occupied, if not over-occupied, in the efforts which seem to become less and less productive in getting a living from their business, and have little time or labor to spare. This Association is a voluntary and an unincorporated body, and therefore not entitled to representation in the Decennial Convention of 1870. Should your Committee therefore undertake to make a preliminary revision of the Pharmacopœia, and should this be presented at the next annual meeting and be accepted by the Association, it would have to be offered as a voluntary contribution at the convention, and might to a great extent merely duplicate the labor as performed by incorporated representative bodies. Such a report would doubtless be courteously received from this Association, and would obtain its due weight both in the convention and with its committee of final revision; but whether the good accomplished would be at all commensurate with the labor involved in such a report may well be doubted. Under these circumstances your Committee would suggest that a simple critical review of the Pharmacopœia in the light of past experience, by each member of the Committee independently, each making mere points of approval or objection, as his experience and information might indicate, might be all that would be warranted or required. And unless the Association otherwise orders or directs this will be the course pursued.

On behalf of the Committee,

E R. Squibb,

Brooklyn, Sept. 5, 1868. Chairman.

The permanent Secretary read a letter dated Toronto, Canada, Sept. 3d, from Henry J. Rose, Secretary of the Canadian Pharmaceutical Society, in which he expresses the thanks of that Society for the invitation extended by our Secretary to send delegates to this meeting.

Frederick Stearns, after a few appropriate remarks, offered the following:

"*Resolved*, That the American Pharmaceutical Association welcome heartily the presence at this meeting of the Delegation from the Montreal Chemists Association, the first one accorded to us from the Dominion of Canada."

Dr. Edward R. Squibb then introduced to the meeting both delegates from the Montreal Association, whereupon the resolution was unanimously adopted.

Mr. Mercer and Dr. Edwards expressed their thanks appreciatively for the reception extended to them.

The time for presenting the annual address of the President having arrived, Secretary Maisch and Dr. Squibb read that document, which was accepted and referred for publication; the suggestions and propositions contained therein being referred to the Business Committee, to be brought up for action in due course. A few extracts from the report are here printed.

Gentlemen,—In retiring from the high official position with which it has been your pleasure to honor me, I regret the necessity of recalling to your indulgent consideration the same personal reasons which caused me to hesitate in accepting that mark of your kind deference. I then stated that my health was feeble, and am now obliged to admit that it would be imprudent for me to venture from home. I the more regret my absence from your sixteenth annual meeting, as it occurs in Philadelphia, which has done more than any other city in the Union to extend pharmaceutical science, and render available its practical resources. Through its well-appointed College of Pharmacy it has successfully exercised its influence upon the moral, intellectual and business character of those intended for our profession, to fit them for their important and confidential relations to the patient, their intelligent co-operation with the physician, and their advancement of our science.

. . . . It was resolved at the last meeting to increase the annual dues to three dollars (formerly two dollars), and to charge five dollars instead of three for certificates after the present meeting, the initiation fee of three dollars remaining unchanged. Life membership, that threatened us with a decrease in revenue without any decrease in the number of Proceedings to be printed, was abolished. Nearly all the life members, in accordance with the circular sent them according to your instructions, voluntarily relinquished their right of exemption from further payment of annual dues. It argues well for the future existence of this Association, that its members should so generally have resolved to tax themselves, and to cede their right to life membership that they had either acquired or had been looking forward to. As there has been a diminution in the number of non-contributing members, besides an increase of about five per cent. on the roll of active members, what with the increase of dues it may be permitted to suppose that we shall no longer be obliged to forestall our receipts, as of late years. There is, however, some dilatoriness in paying the dues, for which there can be but little excuse. . . . .

The Executive Committee have been busy, as usual, and more than usually successful in the early production of a very creditable volume of the annual Proceedings; creditable alike to them, the contributors, and the Association. The Committee mention the want of a system to furnish them with the names of deceased members, which it is their sad duty to report. I would suggest that the members of each State send the details of death occurring within their limits to one of their number, selected by them, to be communicated to the Executive Committee. This subdivision of States is one that it is proposed to make available in our attempts to obtain State legislation and appropriations for Colleges. I would suggest that a copy of our Proceedings be sent to the State library at the Capitol of each State, for the use of the Legislature.

In accordance with a resolution passed at our last meeting, a circular was addressed by our indefatigable Permanent Secretary to the Governors of every State. In the report of the Committee you will be informed of the result of this attempt to ascertain what encouragement this Association might rely upon to begin with in its plans to establish Colleges of Pharmacy throughout the country, and also if the Legislatures would be disposed to enact laws for the practice of our profession by the exaction of a diploma of competency, as exist in [nearly] all civilized communities in Europe. . . . .

[The address favors the obtaining of an act of incorporation by the general government, and making all foreign members honorary members, so as to remove that obstacle, and having a resident Assistant Secretary in Washington.

The idea of making the chairman of the Committee on the Progress of Pharmacy a permanent officer, like the Secretary, is brought forward, but not approved, on the ground of preventing the educating influence of a rotation in the office.

The subject of the communication from the East River Medical Association, as referred from last year, is considered too local in its character to require the action of the Association. The President believes the resolutions are opposed to the practice of Europe, and that we should not interfere with the liberty of the patient.

The address favors the appointment of a standing committee on "unofficial formulas," to report annually, so that the many floating formulæ which have merit may be gathered and made known.] .

The Committee on the Drug Market, by statistics, show the oppressive character of the tariff as applied to our business. Over half the dutiable articles consist of drugs and medicinal preparations, &c., whose total money value hardly warrants their being enumerated thereon. These facts have repeatedly been brought before the Association. I would suggest the appointment of a standing committee on the tariff, to lay the matter before the Executive, and to memorialize both houses of Congress, and that the matter be agitated continually and perseveringly until we effect a thorough change. We will have the assistance of the wholesale trade and of the medical profession, backed by public opinion. The proposed committee must try to secure a more rigid enforcement of the law of 1848 to prevent the importation of bad and worthless drugs, being a fundamental principle of this organization, as enunciated in Section 1, Article 1st of our Constitution. I am more convinced than ever of the great utility of that law, and many facts to the support of that assertion will be brought to your notice. It is the only law that the Government has ever vouchsafed us. European nations may do without it, as they rely on stringent internal police regulations not compatible with our institutions, and England being the market of the world, has the advantage of having the first pick. It is for us a necessary protection, and it would be highly proper that the members of our Association who reside in districts where there are drug examiners, should see that the duties of the office are properly discharged, and report thereon to the tariff committee. This committee should urge that the salary be increased sufficiently to command all the qualifications required for so responsible a position. The importation of powdered drugs, at least in wholesale quantities, should be prohibited. Worthless drugs rejected by the examiner are said to have been powdered on their return to Europe, reshipped to this country, consigned to a different party to avoid suspicion, and thus the law has been evaded. . . . .

The report of the delegation to the International Pharmaceutical Congress in Paris was published in last year's Proceedings. It was the only delegation that voted for the free practice of pharmacy, with the guarantee of a diploma and personal responsibility. Such regulations were not sufficiently stringent to meet the views of our European brethren. They considered certain regulations necessary, to which our delegation could not reconcile their ideas. There is little in common to stand on, yet it would be proper that a delegation be appointed to attend the next Congress, wherever it shall be convened. There is a growing tendency in England to adopt reasonable laws, and in Germany there exists a desire for the partial abolition of their existing protective and police regulations.

[The address favors the idea of a universal Pharmacopœia within certain limits, as a means of giving uniformity of strength throughout the civilized world to such preparations as the tinctures of aconite and nux vomica, wine of colchicum, etc., but thinks each nation would need a special code besides.]

There is also the British Pharmaceutical Conference, which has held its fifth annual meeting; and the Pharmaceutical Society of Great Britain, that is entrusted with the enforcement of the laws relating to the practice of pharmacy; with which we should continue to cultivate intimate relations, as they challenge our sympathies by the great similarity of their organization and objects with our own; and the experiences and sympathies of co-workers must always be desirable. The success they have already met with should be the subject of congratulation.

[The address favors the adoption of decimal weights, and the abolition of the regulation in the Custom-house, requiring metrical weights to be converted into avoirdupois before fixing the duties, be urged. Also that their adoption be urged at the next decennial revision of the Pharmacopœia.

The address advocates the introduction and culture of foreign drugs and articles when suited to our soil and climate, such as the olive, liquorice, lemons, and even rhubarb and opium; and recommends the dissemination of accurate information on these points as contributions to the industrial advancement of our country.]

Before closing, I would address you according to my convictions on the true plan, to use the words of our Constitution, "of improving the science and art of pharmacy, of regulating the system of apprenticeship, and of suppressing empiricism" with any degree of success,—and that is by professional instruction. It will require the whole influence of every member to further the plan proposed, or a better one. It will take a long time, and require hard work. We must commence by organizing our forces. It would be necessary to appoint "a central committee on laws and colleges," and all the members in each State should band themselves together and constitute "sub-committees" for their respective States. The general committee should publish a full collection of all the existing State laws bearing on the subject, together with comments, followed by an account of kindred laws in Great Britain, especially those lately enacted. They will issue instructions as far as necessary, and drafts of the proposed laws for the use of the sub-committees. Every member should, by explanation and by all proper arguments, endeavor to enlist the influence of every prominent citizen he can reach,—the State representatives, the ministers, the lawyers, the physicians, his customers, and the editors,—so as to bring the legislature and executive of each State over to our views, and never cease till we have obtained the requisite laws, and founded a College of Pharmacy in each State. It was by such means that we succeeded in obtaining the drug law of 1848, when the country was much less prepared for such a step than now. . . .

[The address refers to the New York College of Pharmacy, and the active part it took to procure the law of 1848; and refers to the existing law limited to New York city, passed in 1839 (and which has always been a dead letter), which forbade any person to commence business as an apothecary after 1839 unless furnished with a diploma by the College of Pharmacy, under a penalty of $50, payable to the N. Y. Dispensary.]

It is contemplated, in the scheme I have suggested, that the central committee on laws and colleges, through the State sub-committees, be the means of obtaining the signatures to the petitions that the committee on the tariff or other committees might require in memorializing Congress; and if our seven hundred members will only reach the Congress-men individually who represent their respective districts, we will surely obtain compliance with any just and reasonable demands. We must create a uniform demand in every State for salutary laws that will protect alike the public and the pharmaceutist, and not rest till we obtain them. As each State yields in turn to these requests, the number of colleges will rapidly multiply, and the courses of study in the older ones will have to be extended if they will retain their prestige.

J. MILHAU.

New York, Sept. 7th, 1868.

Invitations were received and read from the Faculty of the University of Pennsylvania, the College of Physicians, the Academy of Fine Arts, and the Managers of the Blind Asylum.

Alfred B. Taylor, chairman of the committee of arrangements for the Association, extended an invitation to the members and their families to be present at the *conversazione*, to be held this evening at 8 o'clock.

On motion, the Association adjourned until to-morrow morning, at 10 o'clock.

Second Session.—Wednesday, Sept. 9th.

The meeting was called to order by Vice-President R. J. Brown, at 10 o'clock.

The minutes of the first session were read and approved.

On motion of Thomas S. Wiegand, the medical profession were invited to attend our sittings, by a unanimous vote.

The Treasurer, Charles A. Tufts, now read his report for the last year. The receipts, including balance on hand at the beginning of the year, amount to $2713.16; of this sum $1877 arise from contributions of members, $373 from sale of certificates, and $39.77 from sale of Proceedings.

The disbursements amount to $2463.36, of which $1508.32 was for the publication of the Proceedings.

The duties of the Treasurer have been unusually arduous the last year, owing to the immense correspondence incident to the carrying out of the resolutions of last meeting in regard to life membership and other changes in the financial relations of members, which may be best shown by stating that the item of postage alone amounts to $126.78.

On motion of Dr. Squibb, the report was accepted and referred to a committee to audit—Prof. J. Faris Moore, Charles H. Dalrymple and John Buck.

The Committee on Nominations now presented their report, which was read. Wm. Procter, Jr., nominated as chairman of the Committee on Progress of Pharmacy, declined that service, and Dr. E. R. Squibb, also declining to continue as chairman of the Business Committee, the report was returned to the Committee for revision, which, when reconsidered, read as follows, viz:

For President,

Edward Parrish,	Philadelphia, Pa.

For Vice-Presidents,

Ferris Bringhurst,	Wilmington, Del.
Edward S. Wayne,	Cincinnati, Ohio.
Albert E. Ebert,	Chicago, Illinois.

For Treasurer,

Charles A. Tufts,	Dover, N. H.

Permanent Secretary,

John M. Maisch,	Philadelphia, Pa.

Local Secretary,

[William H. Fuller, of Chicago, was elected at last session.]

Executive Committee,

Thomas S. Wiegand, Chairman,	Philadelphia, Pa.
P. W. Bedford,	New York, N. Y.
Charles A. Heinitsh,	Lancaster, Pa.
Thomas E. Jenkins,	Louisville, Ky.
Prof. John M. Maisch, *Ex-officio*,	Philadelphia, Pa.

Committee on the Progress of Pharmacy,

Frederick Hoffmann, Chairman,	New York, N. Y.
Dr. F. Mahla,	Chicago, Ill.
Lewis Dohme,	Baltimore, Md.
G. F. H. Markoe,	Boston, Mass.

Committee on the Drug Market,

W. A. Gellatly, Chairman,	New York, N. Y.
Charles Bullock,	Philadelphia, Pa.

Henry W. Fuller,	Chicago, Ill.
John P. Muth,	Baltimore, Md.
Isaac T. Campbell,	Boston, Mass.

Committee on Scientific Queries,

William Procter, Jr., Chairman,	Philadelphia, Pa.
George C. Close,	Brooklyn, N. Y.
Israel J. Graham,	Philadelphia, Pa.

Business Committee,

Alfred B. Taylor,	Philadelphia, Pa.
John F. Hancock,	Baltimore, Md.
E. H. Sargent,	Chicago, Ill.

Permanent Committee on the Pharmacopœia,

Edward R. Squibb, M. D., Chairman,	Brooklyn, N. Y.
William Procter, Jr.,	Philadelphia, Pa.
Alfred B. Taylor,	Philadelphia, Pa.

A motion was made to accept the report of the Nominating Committee as now offered, and to deposit a single ballot for the candidates as a whole, which was unanimously adopted.

The Chair appointed F. Victor Heydenreich, of Brooklyn, and C. J. Geiger, of Canton, Ohio, as tellers, who reported the unanimous election of all the candidates.

Messrs. Stearns and Lincoln, by request, now conducted the President elect to the Chair.

President Parrish, in taking his position, made some appropriate remarks, claiming a strong desire to have a place in the hearts of his brethren.

Communications extending an invitation to the members to visit the Franklin Institute and the Mercantile Library were received, read and accepted.

The Auditing Committee reported that they had examined the Treasurer's account and found it correct. The report was accepted and the Committee discharged.

The report of the Committee on the Drug Market being called for, the Chairman, Daniel C. Robbins, of New York, read the report, omitting the valuable statistical tables which accompany it. The report, which was listened to with great interest, and was read remarkably well, was accepted.

The attention of the meeting was called to that portion of the report referring to the Drug Examiners Law, of which the report spoke in unfavorable terms, being in favor of free trade in drugs. W. Procter, Jr., suggested that some clause should be appended to the report if published as read, expressing that the Association does not endorse these views. Several members expressed their views, when, on motion of Mr. Gellatly, that portion of the report, referring to the repeal of the Drug Law be referred to a committee of three. The Chair appointed William A. Gellatly, Daniel C. Robbins and William Procter, Jr., to this duty, to report at the next sitting.

On motion of the Business Committee, it was agreed that the opening hour of the session of Thursday morning be given to Dr. Squibb for reading papers on scientific subjects.

An invitation from the directors of the Sanitarium for the treatment of persons suffering from the effects of alcoholic stimulants was received.

On motion, it was decided that when the meeting adjourns it be till the hour of 3 o'clock, P. M.

The Committee of Arrangements gave notice that carriages would be in waiting at the Continental Hotel at 3 o'clock, to take the ladies of the visiting members of the Association on an excursion to the rural districts, and that several ladies and three gentlemen of the Committee would be in attendence.

The meeting then adjourned.

Third Session — Wednesday Afternoon.

The meeting was called to order at 3 o'clock, by President Parrish.

Dr. Squibb, acting for the Chairman of the Business Committee, absent on duty, brought forward several of the recommendations of President Milhau.

Dr. Squibb moved, in accordance with the late President's recommendation, that an act of incorporation be applied for, which, after some discussion, was decided in the negative.

A motion to appoint a committee to examine the specimens on exhibition in the hall below was carried, and the Chair appointed Dr. Frederick Hoffman, of New York, Dr. Robert Bridges, of Philadelphia, N. H. Jennings, of Baltimore, Matthew F. Ash, of Jackson, Miss., and G. W. Sloan, of Indianapolis, Indiana, to this duty.

Dr. Squibb brought forward, as unfinished business of last year, the communication of the East River Medical Association. Prof. Moore moved to indefinitely postpone the subject, which was subsequently withdrawn. After a long discussion it was, on motion of Charles Ellis, amended by Charles L. Eberle, resolved that a committee of five be appointed to draw up resotions in answer to the communication of the East River Medical Association, expressive of the sense of this Association.

Frederick Stearns, Ferris Bringhurst, J. Faris Moore, H. W. Lincoln and J. H. Pope were appointed to this duty.

The suggestion of President Milhau, in regard to the collection of unofficinal formulæ, was brought up. Dr. Squibb moved to appoint a permanent committee of three to collect unofficinal formulæ, which was carried. The President said he would announce this committee to-morrow.

The recommendation in reference to the tariff on drugs, of the President's address, was met by a resolution from Dr. Squibb, that in the opinion of this Association the duties on drugs ought to be reduced, which was withdrawn until to-morrow.

The following report was now read by the Chairman:

The committee to whom was referred that portion of the report of the Committee on the Drug Market, relating to the law for the examination of drugs, respectfully report the following resolution:

Resolved, That in accepting the valuable and interesting report of the Committee on the Drug Market, this Association does not endorse that portion of the report referring to the inutility of the law requiring the examination of foreign drugs before entry at the Custom Houses, (a law intimately connected with the origin of this body), believing that, however imperfect the law may be, its comparative fruitlessness has mainly arisen from the inability and unfitness of the agents appointed to execute its provisions.

Signed, W. A. GELLATLY,
WILLIAM PROCTER, Jr.

On motion, the resolution was adopted without dissent.

The subject of sending delegates to the third International Congress, to be held in Vienna in 1869, being brought up, it was on motion resolved that the President and Executive Committee be empowered to appoint delegates to the conference at Vienna, should such action become necessary or advisable.

The recommendation of the late President to instruct the Pharmacopœia Committee to introduce decimal weights and measures was negatived, because this Association cannot send representatives in the Pharmacopœial Convention at Washington to advocate such a measure.

Then adjourned until 8 o'clock this evening, for the purpose of reading the answers to queries and other scientific papers.

Fourth Session.—Wednesday Evening.

President Parrish in the Chair.

In answer to query 1st, Joseph P. Remington read a paper on the quality of Hydrargyrum cum Creta as found in the market, accompanied by specimens of the samples analyzed. The microscopic results were quite interesting, red and black oxide of mercury being visibly present in old samples, and the globules were seen bright and unstained in the recent powder. The paper was referred for publication.

Query No. 2, on Hydriodic Acid of the Pharmacopœia, referred to Mr. Dunn, of Brooklyn, was also read by Mr. Remington, and was accepted and referred.

Query No. 3 was not replied to, but, by request, was continued to Isaac W. Smith.

Query No. 4, referred to Mr. Colby, of New York, was not replied to, and as its prosecution was declined, Prof. Maisch volunteered to reply to it next year.

Query No. 5, on Oil of Camphor, was not replied to by Mr. Archibald.

Query No. 6. Mr. Markoe stated, in answer, that the consumption of chicory for taraxacum in Boston amounts to about 10,000 pounds annually, whilst true taraxacum is used to the extent of only 2000 pounds.

Query No. 7, relative to Chlorinated Lime, was not replied to, and was dropped.

Query No. 8, on the Crystalline deposit in fluid-extract of Cloves, was answered by F. Llewellyn, of Louisville, in a paper read by the Secretary, which was referred for publication.

Query No. 10, on Buchu, being called for, Thomas A. Lancaster stated that his investigation was incomplete, and requested the subject to be continued another year.

Query 13, on Competition as a means of Progress in Pharmacy, accepted by Mr. Colcord, and Query 14, relative to a Universal Pharmacopœia, accepted by Mr. Doliber, were not answered, and were dropped from the list.

Owing to the absence of many who had papers to read, the Business Committee brought forward the following resolutions:

Resolved, That the Permanent Secretary be directed suitably to acknowledge the obligations of the Association to the

University of Pennsylvania, Medical Department,
Pennsylvania Academy of Fine Arts,
The College of Physicians and Surgeons,
The Pennsylvania Asylum for the Blind,
The Franklin Institute,
The Mercantile Library,
Librarian of the American Philosophical Society, and the
Directors of the Sanitarium at Media;

With the acceptance of their kind invitations, and the thanks of the Association.

Resolved, That it is the deliberate conviction of this Association that the present high tariff on the importation of drugs is detrimental to the interests of this Association, without yielding a corresponding revenue, if revenue at all; and that, therefore, the Committee on the Drug Market be instructed to embrace the subject of the present tariff in the report of that Committee to the next annual meeting, to the end that the influences of this Association may be wisely directed in this matter.

After due consideration, these resolutions were adopted.

After some general remarks of a conversational character, the meeting adjourned until 10 o'clock on Thursday morning.

Fifth Session.—Friday Morning, Sept. 10th.

President Edward Parrish called the meeting to order at 10 o'clock.

The reading of the minutes of last session was dispensed with.

Prof. Parrish, as Chairman of last year's Committee on Queries, read the report, in an unfinished condition, action on it being postponed until a later session.

Dr. Edward R. Squibb presented some indigenous drugs, and accompanied them with some remarks, which were accepted and referred.

Dr. Squibb also read an answer in reply to Query 31st, on the Contamination of Muriatic Acid with Sulphur Compounds, which was accepted and referred for publication.

Dr. Squibb also read a paper entitled "Note on Rhubarb," which he illustrated with several large and fine lots of rhubarb root, and some samples of the powder. The writer's object appeared to be to show that although good rhubarb is scarcer than formerly, yet it may be had if there is a willingness to pay the advanced price of it. He also gave an account of a transaction in which rhubarb that had been rejected by the New York Examiner of Drugs was reshipped to England, and, after being "doctored," was consigned to a different party, and passed the Examiner. It was referred for publication.

Dr. Squibb now read an extended paper on Carbolic Acid, which attracted much attention. The principal portion of the paper was directed to the uses of this important substance as an *azymotic* agent, detailing various experiments with regard to its power of destroying cryptogamic life.

This paper also was well illustrated with specimens, and was referred for publication.

The Secretary having made some inquiry in regard to the existence of a code of ethics of this Association, offered the following resolution:

Resolved, That a committee of five be appointed by the Chair to take into consideration the Code of Ethics adopted at a former annual meeting, and report thereon.

The resolution was adopted, and the President appointed Wm. Procter, Jr., of Philadelphia, H. W. Lincoln, of Boston, Dr. J. B. Edwards, of Montreal, E. H. Heinitsh, of Columbia, S. C., and C. J. Geiger, of Canton, O., to report thereupon.

The Chair announced the following committee on unofficial formulæ: G. F. H. Markoe, of Boston, Prof. J. F. Moore, of Baltimore, and Albert E. Ebert, of Chicago.

The Executive Committee now brought forward the following candidates for membership,—viz.:

E. M. Roche, Philadelphia, Pa.
Wm. Elliott, Baltimore, Md.
J. S. Crawford, Dayton, O.
Theo. F. Burt, Brooklyn, N. Y.
Thos. Jones, " "
Geo. H. White, Jersey City, N. J.
Wm. W. McKechnie, " "
Jos. Karch, Dayton, O.
Jas. L. Contant, Flushing, N. Y.
Jas. P. Frames, Baltimore, Md.
Henry A. Bower, Philada., Pa.
Wm. McIntyre, " "
J. H. B. Jefferson, Baltimore, Md.
Fred. J. Delker, Ashland, Schuylkill Co., Pa.
Caleb R. Keeney, Philada., Pa.
Chas. A. Osmun, New York, N. Y.
Robt. England, Philada, Pa.
Wesley Mullin, Chestnut Hill, Phila. Pa.
J. F. Daniel Lobstein, Sagharbor, N. Y.
Geo. F. Dege, New York, N. Y.
Wm. H. Voorhees, Plainfield, N. J.
Henry B. Lippincott, Philada., Pa.
Bennett L. Smedley, " "
John J. Lambe, Hartford, Conn.
A. Breunert, Kansas City, Mo.
R. Parham, Leavenworth, Kansas.
Henry C. Morse, Elmira, N. Y.
J. Muse Worthington, Baltimore, Md.
Jacob Heisler, Vincenttown, N. J.
Andrew J. Ditman, New York, N. Y.
Chas. B. Smith, Newark, N. J.
Adolph W. Miller, Philada., Pa.
Henry T. Peck, " "
Roland Seeger, " "
M. Primo, Mobile, Ala.

J. L. Lemberger and S. S. Bunting were appointed tellers, and reported the unanimous election of the gentlemen named in the list to membership in the Association.

George C. Close read a paper on Conia and its Salts, in answer to query 33d, accompanied by a specimen of muriate of conia—the paper was accepted and referred.

The Committee appointed to consider the subject of the renewal of prescriptions, as brought up from last year, read the following preamble and resolution as their report.

Whereas, The East River Medical Association of New York, through its Secretary, has submitted a preamble and series of resolutions regarding the renewal of Physicians prescriptions without due authority for such renewals, for our consideration, and

Whereas, The discussion of this important subject has called forth a free expression of opinion from our members, therefore

Resolved, That this Association regards the Pharmacist as the proper custodian and owner of the Physician's prescription once dispensed.

Resolved, That however desirous we may be to accede to the request of the East River Medical Association, the restriction of the Pharmacist to a single dispensing of a prescription without the written authority of the prescribing physician for its renewal, is neither practicable nor within the province of this Association.

Nevertheless we regard the *indiscriminate* renewal of prescriptions, especially when intended for the use of others than those for whom they were prescribed, as neither just for the physician nor to the patient, between whom we stand as conservators of the interests of both, and that such abuses should be discouraged by all proper means.

Signed,
F. Stearns, of Detroit, Mich.
Ferris Bringhurst, of Wilmington, Del.
Henry W. Lincoln, of Boston, Mass.
Prof. J. Faris Moore, of Baltimore, Md.
John H. Pope, of New Orleans, La.

On motion, the resolutions were adopted and the Committee discharged, by an unanimous vote.

Prof. Bedford, of New York, read a paper in reply to query 18, on the Morphia strength of Commercial Opium.

The same gentleman replied to query 29, on Syrup of Lactucarium, both of which were accepted and referred.

Prof. Maisch made some verbal remarks on the lactucarium from American species of lactuca, and exhibited a specimen of the product, which in its physical characters is closely allied to the commercial drug.

Henry W. Lincoln, of Boston, offered the following resolution, which was carried:—

Resolved, That a committee of five be appointed by the Chair to solicit photographs of members of the Association, to be kept in an album to be on exhibition at our annual meetings.

The President subsequently announced the following as the committee on this subject, viz:—Henry W. Lincoln, of Boston, P. W. Bedford, of New York, James T. Shinn, of Philadelphia, Louis C. Strehl, of Chicago, G. E. Jeannot, of Louisville, Ky.

Then adjourned until three o'clock this afternoon.

Sixth Session.—Thursday Afternoon.

President Parrish, presiding, opened the meeting at 3½ o'clock. The minutes were read and adopted.

On motion of Ferris Bringhurst, it was

Resolved, That the Secretary be directed to furnish a copy of the resolutions in regard to the renewal of prescriptions to the East River Medical Association.

The Secretary now read the following communication from Chicago.

"CHICAGO, Sept. 5, 1868.

At a regular meeting of the Chicago College of Pharmacy, held Sept. 2d, 1868, a resolution was passed extending a cordial invitation to the American Pharmaceutical Association, to hold their next annual meeting in the City of Chicago.

LOUIS STREHL,
Recording Secretary.

To the Secretary of the American Pharmaceutical Association."

The Secretary read the report of the Committee on the legislation regulating the practice of Pharmacy, which was accepted.

The resolution appended to the report came up for action. The Business Committee offered an amendment that it is expedient to appoint a committee to frame such a law.

The amendment was adopted. An amendment to strike out the clause referring to the American Medical Association and to local bodies, was adopted, when the resolution stood thus:

Resolved, That it is expedient to appoint a committee to draft a law to be presented to the legislatures of the various States.

After some discussion on the number of members to be appointed on this duty, the number three was adopted, when the resolution as amended was adopted.

The Committee on the Code of Ethics made a verbal report to the effect that they had examined the subject and find that the Code was adopted with the Constitution at the beginning of the Association, and, although it has never been formally set aside or abolished, it was practically so considered when the Constitution was thoroughly revised in 1856, since when it has not been printed with the Proceedings annually. The Committee recommended the reading of the Code, and the first article of the Constitution, that members may know just what they contain, and then by a vote decide whether to abolish the former.

Pending the consideration of this report, a motion to adjourn till 9 o'clock to-morrow morning was carried.

Seventh Session.—Friday Morning, Sept. 11*th.*

The meeting was called to order by the President at 9½ o'clock, when the minutes of the sixth session were read and adopted.

Prof. Procter, Chairman of the Committee on the Code of Ethics, read the Code and Article 1st of the Constitution.

It was moved and seconded that the Code of Ethics is considered to be superseded by and embodied in Article 1st of the Constitution, which was unanimously adopted.

The Secretary announced that Mr. F. V. Heydenreich has received several copies of a monograph on Cantharis officinale, by M. Armand Fumouze, for distribution.

It was announced that several members had found fault with the certificate of membership, considering it not sufficiently ornamental. To test the views of the members, it was moved and seconded that a new certificate be obtained. When all the votes were cast in the negative.

Dr. Frederick Hoffmann, of New York, made some remarks on the eminent services of Prof. Dr. Ehrenberg, of Berlin, and called attention to the propriety of expressing the sentiments of this Association towards that savant, to be presented to him on the *jubilæum* to celebrate the fiftieth anniversary of his scientific doctorate. After other remarks in the same direction, Dr. Hoffman presented the following resolution:

"*Resolved*, That a committee of three be appointed to embody the kind sentiments of this Association, to be sent to Dr. Ehrenberg, of Berlin, on the occasion of his approaching jubilæum, in the name of the Association."

The resolution was unanimously adopted.

Dr. Hoffmann, Prof. Procter and Prof. Maisch, were appointed by the Chair to carry it into effect.

Prof. Procter moved the following:—

"*Resolved*, That the Executive Committee are hereby instructed to have the reports on the Legal Aspects of Pharmacy and on the Drug Market printed in larger editions than the volume of Proceedings, that extra copies of the former be furnished to the libraries of the several State Legislatures, to the governors of the several States, and leading judges of the courts, and that the latter be placed at the disposal of the Committee on the Drug Market for the coming year."

The resolution was adopted.

On motion of the Business Committee, it was unanimously resolved that the Association meet next year in the City of Chicago, on the first Tuesday in September.

Scientific papers being called for,

Charles L. Eberle, of Germantown, Phila., read the reply to query 11, on Gelseminia, which was accepted and referred for publication.

Mr. Eberle also read the answer to query No. 30, on Suppositories, which he illustrated with specimens. The paper was accepted.

Prof. Markoe read a reply to query No. 22, on Permanganate of Potassa as an agent for purifying alcohol rendered impure by use in pharmacy as an extracting agent, &c. Which was accepted and referred for publication.

Prof. Parrish read a paper on Practical Education in Pharmacy, which was accepted and referred.

Dr. Squibb read a paper on Valerianic Acid, by F. C. Musgiller, of Brooklyn, in reply to query 24, which was illustrated by specimens.

The paper was accepted and referred.

Prof. Maisch read three papers by Dr. S. P. Duffield, in reply to queries 26, 34 and 40, which were respectively on the Preparation of Pyrophosphate of Iron; on the relative Digitalin value of American grown and European Digitalis leaves; and on the question, are the leaves of Podophyllum peltatum poisonous? They were all accepted and referred for publication.

The Executive Committee now brought forward a list of eminent pharmaceutists in Europe, who had been suggested to them in a communication signed by Messrs. Taylor, Bedford, Lincoln, Heydenreich, Parrish, Procter, Hoffman, Moore, Tufts, and Maisch, as worthy of election to honorary membership in this Association; viz.:

Daniel Hanbury, London, England.
Henry Deane, " "
A. T. DeMeyer, Brussels, Belgium.
Norbert Gillé, " "
Dr. F. A. Flückiger, Bern, Switzerland.
M. Robinet, Paris, France.
M. Boullay, " "

Dr. G. C. Wittstein, Munich, Bavaria.
Dr. Frederick Mohr, Bonn, Prussia.
Dr. Hermann Hager, Berlin, "
Dr. G. Dragendorff, Dorpat, Russia.
Dr. Arthur Casselmann, St. Petersburg, Russia.

A ballot was ordered, and they were unanimously elected honorary members of the Association.

The Executive Committee offered the following list of candidates for membership,—viz.:

Geo. Foss, Hoboken. N. J.
Chas. P. Johnson, Memphis, Tenn.
Wm. F. Roche, Philada., Pa.
John E. Grove, " "
John C. Hurst, Phila., Pa.
A. W. Wright, " "
James Evesson Bright, Worcester, Mass.

Messrs. Thomas A. Lancaster and Jos. P. Remington acting as tellers, announced them unanimously elected to membership.

Prof. Maisch exhibited a sample of Galanga root, which had been sold in the West as Radix Blodgetti, at 25 cts. per ounce, to meet the demands of a certain quack formula in vogue some time ago.

Thomas A. Lancaster moved the following resolution:

Resolved, That a committee of three be appointed to draft and present at the next annual meeting, rules and regulations in compliance with parliamentary usages, so as to facilitate and expedite the business of the Association.

Mr. Stearns moved to amend by referring the subject to the Business Committee, which was seconded and passed, when the resolution as amended was adopted.

The Secretary announced the reception of certain books from Messrs. Wood & Co., of New York.

On motion of Mr. Stearns, they were accepted, and the thanks of the Association tendered to that firm.

The committee to draft a law and memorial, in accordance with the resolution previously adopted, was now announced as Wm. Wright, of New York, Frederick Stearns, of Detroit, and J. Faris Moore, of Baltimore.

William J. Allinson, of Burlington, N. J., moved that the President and Secretary be added to that Committee. Charles A. Tufts took the question, which was unanimously adopted.

Ferris Bringhurst read a paper in answer to Query 35, on the use of yellow and white wax in ointments, which was accepted and referred.

Dr. Squibb read a reply to Query 36, which was accepted.

Prof. Procter remarked that he had requested, through his friend Dr. Squibb, that no queries be given to him last year. Those on the list being old questions continued, he asked to be excused from replying to them, which was granted.

Mr. Heydenreich made some verbal remarks relative to Query 39.

Query 41, referred to Mr. Markoe.

The Secretary read papers by William Saunders, of Canada, on Oil of Stillingia, and by A. T. Moith, on Secret Nostrums, which were accepted and referred.

Henry W. Lincoln now read a voluntary paper on the Apothecary's Coat of Arms, illustrated with several drawings, which was accepted.

The Executive Committee proposed the following name for membership:

Alex. C. Peters, of Newark, N. J.

Messrs. Dalrymple and Heydenreich were appointed tellers, and reported his election.

Louis Strehl read a paper on Extract of Meat, by the Messrs. Tourtelot, which was accepted.

Mr. E. J. Dobbins exhibited a patented machine for making suppositories by pressure, on the syringe principle, the piston being operated on by a transverse lever, acting on a rachet wheel attached to a screw on the end of the piston, which gave great power. The result is a cylinder, from which sections are cut of the length desired. By having nozzles of various calibre the sizes are varied.

Mr. Markoe exhibited a pill-roller and cutter ingeniously contrived, which, as it was not patented, was directed to be figured for the Proceedings.

Mr. Stearns offered the following resolution:

Resolved, That the thanks of the Association are eminently due and hereby heartily tendered to the members of the College of Pharmacy of Philadelphia for the use of their college rooms during the sessions; and, together with them, to the druggists and pharmacists of this city, for their attentive and generous care of the Association, and for the kind hospitality to the members and their families during the visit to Philadelphia.

The question was taken by Mr. Tufts, of Dover, N. H., and carried without dissent.

Resolved, That the thanks of the Association are due and are hereby tendered to the retiring officers for their labors during the past year, and to the acting officers for their attention during the sessions.

The question was taken by Dr. J. Baker Edwards, of Montreal, and carried.

Resolved, That we thank our highly competent and careful reporter, Mr James H. Slade, of Boston, and the several reporters for the public press who have attended our sittings.

Carried unanimously.

Dr. Frederick Hoffmann, Chairman of the Committee on Exhibition, offered some remarks on the specimens on exhibition, speaking favorably of them, and promising to prepare a written report in time for the Proceedings. [See editorial.]

James T. Shinn made a motion to allow the Committee sufficient time to complete their report.

Prof. Procter, on behalf of Prof. Parrish, late Chairman of the Committee, brought forward the completed report on Queries, which was accepted, and is as follows:

The following Queries have been prepared and have been accepted by the members during the session, viz :—

QUERY 1st.—An inquiry into the origin, culture, and trade in Rhubarb in China?

Accepted by Henry W. Lincoln, of Boston.

QUERY 2d.—Does the milky juice of the common species of Asclepias possess narcotic or other medicinal properties? (Two years will be required to answer this query, as the season is now too far advanced to collect the juice in its perfection.)

Accepted by Prof. J. M. Maisch, of Phila.

QUERY 3.—What are the best forms for using Celandine (Chelidonium majus, Linn.) in medicine, including its recent juice, with formulæ?

Accepted by Prof. J. J. Graham, of Philadelphia.

QUERY 4th.—What are the best processes for ascertaining the strength of fluid extracts and tinctures containing no alkaloids?

Accepted by Prof. Graham.

QUERY 5th.—What is the most eligible process for obtaining persulphate of iron in a dry powder, not objectionable for deliquesence?

Accepted by F. V. Heydenreich, of Brooklyn, N. Y.

QUERY 6th.—Are the extract and fluid extract of Conium of commerce as inert as some recent writers represent, and can these preparations, made by the process of the Pharmacopœia, be depended on?

Accepted by G. F. H. Markoe, of Boston.

QUERY 7th.—Are Sugar-coated Pills of commerce generally as soluble as those of like age kept under ordinary circumstances without coating?

Accepted by John Buck, of Chelsea, Mass.

QUERY 8th.—What kind of glass ware is, on the whole, best adapted to shop furniture—what shapes are most to be preferred for salt-mouthed and tincture bottles, and what kinds of dispensing and prescription bottles are best? With practical remarks on the glass manufacture in its bearings on pharmacy. *Accepted by T. S. Wiegand, of Phila.*

QUERY 9th.—Whence are the Corks of commerce derived, and where are they cut; with general observations on the commercial history of Corks and Cork Wood?

Accepted by P. W. Bedford, of New York.

QUERY 10th.—What strengths of Alcoholic Menstruæ are best adapted to the treatment of the officinal gum resins with reference to producing permanent preparations less incompatible with aqueous dilutents than the present officinal tinctures?

Accepted by Alfred B. Taylor.

QUERY 11th.—Which of the preparations of the late edition of the Prussian Pharmacopœia are preferable to like preparations in our own; and what new Drugs and preparations in that standard should be transferred to the U. S. Pharmacopœia, out of regard to the numerous German practitioners in the United States?

Accepted by Victor Heydenreich, of Brooklyn.

QUERY 12th.—Gelsemium Sempervirens is found to be a valuable remedy in the treatment of nervous symptoms, consequent on the suspension of opium after its habitual use. What forms of preparation and what combinations with opium, if any, will be useful in practice?

Accepted by Dr. J. Manlius Smith, of Manlius, N. Y.

QUERY 13th.—What are the sources of Asphaltum of commerce, now so largely used in roofing, and what uses is it capable of in Pharmacy?

Accepted by G. F. H. Markoe, of Boston, Mass.

QUERY 14th.—How does Pharmacy compare in its emoluments and social advantages with other professions and trades, and what general means, if any, can be adopted to render it more profitable and to regulate the number of its practitioners?

Accepted by Frederick Stearns, of Detroit, Mich.

QUERY 15th.—What are the sources of Bromine in the United States, and what is the extent of its production for the supply of commerce?

Accepted by Charles H. Dalrymple, of Morristown, N. J.

QUERY 16th.—What is the best substitute for Camphor for the protection of woolens from moths and other insects, that will be cheaper and equally effective.

Accepted by G. F. H. Markoe, of Boston, Mass.

Query 17th.—In view of the scarcity and high price of Cardamoms, may not Asarum, Canadense, Canella Alba, Calamus and Ginger be used singly or combined in place of that aromatic in some officinal preparations at the next Revision of the Pharmacopœia.

Accepted by Joseph L. Lemberger, of Lebanon, Pa.

Query 18th.—What are the sources of Vinegar made and sold in the United States, and what relation in quantity and quality does the true cider vinegar produced bear to that from other sources.

Accepted by P. R. Hoagland, of Boston.

Query 19th.—What is the actual practical power of the Microscope for detecting impurities in commercial powders of drugs?

Accepted by Joseph P. Remington, of Brooklyn, N. Y.

Query 20th.—Lycopodium Clavatum is said to grow in this country. To what extent is this true, and may the lycopodium sporules be collected from it for the supply of commerce?

Accepted by Prof. J. M. Maisch, of Phila.

Query 21st.—What process can be recommended as easy of execution and affording accurate results for determining the percentage of crystalizable alkaloids in cinchona bark?

Referred to Dr. Samuel P. Duffield, of Detroit.

Query 22d.—An Essay on Abies Canadensis and its products yielded to medicine and the arts.

Accepted by William Procter, Jr., of Phila.

Query 23d.—On the present sources of supply and the statistics of the indigenous drug trade of the United States.

Referred to Louis C. Diehl, of Louisville, Ky.

Query 24th.—Tapioca is largely substituted by a product made from other feculas. To what extent is this imitation practiced, and what are the natural sources of the fecula.

Prof. J. Faris Moore, of Baltimore.

Query 25th.—Soluble Pyrophosphate of Iron in scales is observed to become less soluble by keeping. What is the cause of this change, and how may the salt be obtained of constant solubility.

Accepted by G. E. Jeannot of Louisville, Ky.

Query 26th.—What are the best practical tests for the purity of Bromide of Potassium.

Accepted by J. F. Llewellyn, of Louisville..

Query 27th.—The fusing point of true butter of Cacao being near that of the temperature of the body, what is the influence of such additions as wax, tallow, &c., on its fusing point, and to what extent are such additions objectionable as irritants, if at all, in vaginal and urethral suppositories.

Accepted by Charles L. Eberle, of Phila.

QUERY 28th.—The existence in the dry state of Bisulphate of Soda has been doubted, in contradiction to older observations. Can a dry bisulphate of soda be obtained by any one of the published or some other process? If so, does the salt possess sufficient stability as a medicinal agent?

Accepted by S. P. Duffield, of Detroit.

QUERY 29th.—Ammoniated Citrate of Bismuth dried in scales has become an article of commerce. What percentage of bismuth does it contain, as obtained from different sources, and by what process can the largest amount of oxide of bismuth be obtained in this form in soluble condition?

Accepted by J. F. Llewellyn, Louisville, Ky.

QUERY 30th.—Can a pharmaceutical preparation be made from the recent or dried herb of Lactuca Elongata, Muhl., which may be used as a substitute for Lactucarium and its preparations?

Accepted by Prof. John M. Maisch, of Phila.

The committee on nominations presented the name of William H. Fuller, of Chicago, for Local Secretary, which was adopted.

Prof. Maisch mentioned that he had received a letter from M. Berbrugar, of Panama, stating that he would send some specimens of drugs to the Association, but that they had not arrived.

[Prof. Maisch informs us that they have been received since the meeting.—ED.]

On motion, the meeting now adjourned to meet in Chicago, on the first Tuesday of September, 1869.

NOTE ON WINE COLCHICUM SEED (ENG.)

BY JAMES T. KING.

Complaints having been made that some wine of colchicum seed (English) failed to produce its peculiar effects in several cases, even when its administration was run up to teaspoonful doses every four hours, until several ounces were taken, I was induced to make an examination of the wine, to ascertain if it was so deficient in the active principle.

The following method was adopted: From a bottle bearing the label of the English manufacturers, and having the seal over the cork unbroken, one fluidounce was taken, placed in a porcelain capsule, about one grain of oxalic acid added, and the wine allowed to evaporate spontaneously to the consistence of a soft extract.

This extract was exhausted with two drachms of distilled water, and filtered, the filtrate slightly supersaturated with liquor potassa, and two fluidrachms of pure chloroform were then added in a test tube, and the mixture thoroughly agitated several times.

The chloroform was allowed to settle, and then the contents of the test tube poured slowly into a small separating funnel. When the chloroform had become clear, it was run off into a small capsule and spontaneously evaporated, leaving a small amount of yellowish-green residue.

This was treated with one drachm of distilled water, to which had been added two drops of dilute sulphuric acid, then filtered, to filtrate added one drop of Mayer's test,—the $\frac{1}{10}$ normal solution of iodohydrargyrate of potassium,—but obtained not the slightest reaction or trace of a precipitate, showing the wine to contain little or none of the colchicia. To prove that this method would determine the presence of the active principle, one fluidounce of some wine of colchicum that we made from a fair lot of seeds according to the U. S. P. was treated in precisely the same manner as above described, and, on the addition of one drop of the test liquor, a copious canary-colored precipitate was obtained.

Four drops of the test solution were required to precipitate all of the alkaloid.

Physicians report this wine as efficient and active, corroborating the chemical test.

Middletown, *N. Y.*, *Sept.*, 1868.

NOTE ON THE CLEANSING OF COD-LIVER OIL BOTTLES.

By William Procter, Jr.

It is not unusual with the pharmaceutist to take back the empty bottles from consumers of cod-liver oil, and the corks being left out, the air causes the rapid oxidation of the small portion of oil left in each bottle, which becomes semi-fluid, and sometimes nearly solid, and is very troublesome to remove. This is also true of the exterior, which frequently is badly soiled with oxidized oil entirely solid. The junior whose duty it may be at intervals to cleanse the accumulated store of bottles preparatory to refilling, has frequently been worried by the tedious task. The most usual way is to boil the bottles in water containing soda, potash, or soft soap, which, when a large kettle is used, greatly facilitates the process, especially if the alkali employed is caustic; but this involves much space and a fire, and the handling of the bottles is difficult, so that the following plan will be found more convenient in the shop :

Provide a pint of good *benzine*, half a pound of pearlash (or a pound of sal soda), a quarter of a pound of lime, and half a gallon of boiling water. Slake the lime with a part of the water, and add it to the balance containing the potash in solution, and agitate them. These quantities for half a gross of pint bottles. Put about two fluidounces of benzine in a bottle, agitate it well, and in a few moments it will have dissolved all the oil, when it may be poured into another oily bottle, drained a moment, and then four ounces of the liquor potassæ cum calcæ is introduced (which should be warm), a good cork used, and the bottle well agitated. By means of a small sponge tied on a twisted wire, apply the alkaline liquid to the exterior of the bottle, standing in a shallow tin dish capable of supporting four or five bottles. Now pursue a regular order of sequence with the benzine and alkali inside and the alkali outside, shifting the benzine from bottle to bottle until it gets too foul for further use, and then the alkali from bottle to bottle, until it also is exhausted, the interior is soon cleansed, and a thorough rinsing with water completes the work. When the exterior of the bottles is very foul, it will be most convenient to apply the alkali externally *after* the benzine has been used, which enables the operator to see when all the oil is dislodged from the interior when the alkali is subsequently used inside. Finally rinse with alcohol.

Care should be used to reject and throw away the benzine solution of the oil before it gets so foul as to lose its thin consistence favorable to draining, which, when the bottles are dirty, will occur with the eighth or tenth bottle.

It is a good plan, when many bottles are thus taken back, to clean them partially with a little benzine before putting them away, and wiping the exterior with the same, which renders the subsequent labor very easy. These remarks apply to castor oil and other oil bottles or cans. The latter often become very impure, so as to contaminate fresh oil put in them temporarily for transportation, and it would be well for *druggists* who habitually supply cod-liver oil to their pharmaceutical customers in cans, to make a rule systematically to drain them, and occasionally to cleanse them as above, observing to get them absolutely dry before using. Such cans should always be kept corked, and when the corks become foul they should be rejected. These remarks may be considered superfluous by many. For such they are not intended; but if a few only are benefitted by the hints, they will have answered a useful end.

Philad., Sept. 26, 1868.

GETTYSBURG MINERAL SPRING.

By Dr. John Bell.

Notwithstanding its great mineral wealth, Pennsylvania has but few mineral springs. Until recently, that of Bedford was the only one that could be resorted to with any confidence in its water possessing actively medicinal properties. Of late, however, it finds a rival in the Gettysburg Mineral Spring, which, after due deductions from the extreme claims advanced in favor of its wonder-working powers, seems to be entitled to a place in the materia medica as a remedy in gout, chronic rheumatism, dyspepsia and renal diseases, especially in those in which the lithic acid diathesis prevails. In its sensible properties of taste and absence of smell, the Gettysburg has nothing to distinguish it from common water; but it has a marked peculiarity in not undergoing any change by removal from the Spring and subsequent transportation to any distance,—thus allowing of its use by invalids in all places and seasons.

An analysis of the Gettysburg water has been made by Dr.

Mayer, late assistant to Prof. Henry, of the Smithsonian Institution at Washington. He found one imperial gallon to contain :

	Grains, Troy.
Bicarbonate of Soda,	46·05
" Lithia,	
" Potash,	trace.
" Magnesia,	76·05
" Iron,	trace.
" Lime,	81·00
Sulphate of Lime,	53·20
Chlorides,	trace.
Phosphates,	trace.
Silica,	10·00
Total,	266·30

Variations have been noticed in the amount of mineral impregnation of the water at different seasons. The proportion of lithia is not given, and we are left to conjecture how far the presence of this antipodagric substance goes to explain the removal, by the use of this water, of lumps or nodosities, improperly called "chalk stones," from the joints of persons who had previously suffered from rheumatic gout. Cases of this kind are reported, on apparently good authority. We must regard as worthy of all credence, both from his intelligence and high character, the statement of the Rev. Dr. Moriarty's case of gouty rhumatism, written by himself and published in different journals. He had been a sufferer from the disease for sixteen years, one of the attacks being of five months duration, and accompanied by great pain and inability to move. He was entirely restored to the free use of his limbs by a persistent use of the Gettysburg waters for some months, at his own home. He took altogether ten gallons of the waters.

Of the recent cases showing the curative power of this water in rheumatism, the most remarkable is the one of a young lady from Maryland, who visited the spring last summer, as described by Dr. Weaver. Her first attack of rheumatism came on five years ago, and returned at intervals more or less severely until she was reduced to an apparently hopeless condition. Her joints, including those of her fingers and toes were enlarged by "urate or chalky deposits." She had been troubled for a long time by menstrual irregularities, and a cough which was pronounced by some of her physicians as consumptive. When she first came to the spring she had to be carried about like a child by her servants, owing to the extreme debility and pain under which she suffered. We are not told of the length of time during which the water was used, nor the quantity drank ; but the results are very striking. "In thirteen days she was enabled to walk with but little assistance from her servant, and improved so rapidly in all respects that she now appears to be permanently cured, being relieved from the cough, general debility and the irregularities referred to, also the enlargements or chalky deposits around the joints. When she came to the Spring she only weighed 61 pounds ; she now weighs 90 pounds."

The sensible operation of the Gettysburg waters, taken to the extent of a pint, is sometimes aperient, and even in smaller quantities diuretic. It effects some persons who drink it with slight vertigo, showing a certain amount of action on the nervous system.

PHILAD., Oct., 1868.

NOTE ON AMERICAN OPIUM FROM VERMONT.

By WILLIAM PROCTER, JR.

A few weeks ago my attention was called to a sample of "opium," by Mr. C. Wilson, of Monkton, Addison Co., Vermont, who said he had been requested by persons interested in the success of his enterprise to have it examined. On inquiry as to its origin, Mr. Wilson said it was of his own production in the neighborhood above mentioned, and that he had been engaged in the culture for several years, and that it was quite lucrative. After the weather was settled in the spring the seed of the opium poppy (Papaver somniferum) was sown in ground prepared as for a garden, in which the plants grew vigorously, and about the middle of August the capsules attained their size. The collection of the juice was commenced at this time and continued until the first of September, when the whole plants were cut, bruised with a portion of alcohol to prevent fermentation, and then subjected to strong pressure; the juice thus obtained was evaporated to an extract, incorporated with the inspissated juice of the capsules, so that when finished the whole constituted a soft mass of pilular consistence and nearly homogeneous texture, (except a few fragments of vegetable tissue,) possessing a strong narcotic odor almost precisely that of good ordinary opium, but not so decided, and a uniform dark brown color. Its reaction is acid. This year Mr. Wilson obtained 640 pounds of this opium from six and a quarter acres of land, being 100 pounds to the acre, for which he obtained prices varying from eight to ten dollars per pound from druggists and physicians in New England.

When macerated in water it soon breaks down and is readily extracted. The pulpy matter left from 100 grains after percolation with water until exhausted, amounted to 25 grains. One hundred grains carefully dried in a hot air bath weighed 84 grains, and hence contains 16 per cent. of moisture. Subjected to the action of diluted alcohol until exhausted, the residue weighed 13 grains. Treated with ordinary ether and dried, the moist opium lost 20 per cent. of its weight; but 16 per cent. of this loss is due to water in the normal opium, leaving the ethereal extract equivalent to 4 per cent. The ethereal solution had a light greenish color, due to chlorophylle. On evaporating the ether spontaneously, the residue consisted of numerous minute, well-defined crystals of narcotina, a greenish oleo-resinous matter, and the odorous matter of the opium. The crystals are nearly all prisms, with parallel sides and two-sided oblique terminations, and a few stellate groups occur. Separated and wiped, they afford an intense yellow color to nitric acid, and when treated with sulphuric acid followed by nitrate of potassa, they yield the usual deep red coloration of Orfila's test for narcotina. Benzine extracted 4.5 per cent. of green elastic caoutchouc matter containing narcotina. The aqueous and alcoholic solutions respond freely to the tests for *meconic acid.*

The morphia present was assayed by the process of Mohr.

100 grains of the moist opium (representing 84 grains dried) was exhausted with repeated portions of cold water and finally percolated, until four fluidounces of infusion was obtained. This was boiled with 100 grains of lime previously slaked with some of the weaker liquid for fifteen minutes, filtered hot and the

dregs percolated with boiling water till exhausted of the soluble matters of the opium. The alkaline infusion, slightly acidulated with muriatic acid, was evaporated to about half a fluidounce, and when cold neutralized with ammonia and filtered, to separate coloring matter, and then carefully evaporated to about 200 grains, and a slight excess of ammonia added whilst yet warm. After standing twelve hours the crystalline precipitate was carefully collected on a small tared filter, washed, dried, treated with ether and weighed 6·25 grs. This precipitate afforded the characteristic reactions of morphia with nitric acid and sesquichloride of iron.

Now from these results it must be inferred that this new kind of opium contains 6·25 per cent. of morphia in its moist commercial condition, or 7·44 per cent. when it is dry; and that it is much more soluble in water than ordinary opium, affording 75 per cent. of its weight to that fluid. The tincture made from it by the officinal process has the appearance and odor of ordinary laudanum, but of its therapeutic character in relation to Smyrna opium I am wholly uninformed. Now there need be no hesitation in saying that this opium is below the standard of the Pharmacopœia. The maker appears to be entirely candid and honest in his conduct of the process, and the fault is in his not knowing the real character of the substance he is dealing with, and the importance in medical and hygienic points of view that it be parallel in strength with fair Turkish opium, to obtain and deserve the confidence of physicians, apothecaries and druggists. It is probable that the pure exudation from the capsules unmixed with any foreign matter rarely reaches us in the opium market, and there may be less impropriety in employing the inspissated juice of the poppy than the various matters that are introduced at Smyrna and elsewhere, to give consistence to the too soft exudation from the capsule and increase the volume of the product. The fact that 640 pounds of an opium, containing between six and seven per cent. of morphia, was produced in a few weeks after the poppy attained its proper size, from six and a quarter acres of land, in a climate as far north as Vermont, by a moderate force, seems to warrant the belief that, under intellgent regulations, the culture of opium might be effected in this country so as to be a profitable crop. The need of assaying it would be imperative until its physical characters became sufficiently well established to be depended on by commercial dealers.

We would advise Mr. Wilson, he knowing the amount of extract he adds, to reduce its quantity so that the pure juice of the capsules may bear a larger proportion to the gross amount produced. Probably one-half less would make the result nearer commercial opium, containing 10 per cent. of morphia.

There are various experiments going on at the south and west, in Mississippi and elsewhere, this season, but as yet the results have not reached me. The subject is sufficiently important to claim the attention of the American Pharmaceutical Association, and if experimenters throughout the country will communicate their results to the writer with a clear statement of the processes of culture and preparation employed, he will engage to give a faithful report of them to the next meeting at Chicago. It would be best to accompany each communication, if any are sent, with about half an ounce of the product, fairly representing the gross amount produced by the sender.

Philadelphia, Oct. 1868.

SULPHATE OF NICKEL—A SEDATIVE.

J. Dabney Palmer.

In a communication to the *Richmond Medical Journal* last spring, the attention of my medical brethren was invited to the sedative action of sulphate of nickel in neuralgia.

It has since been employed in a variety of painful affections, and also with the view of simply producing sleep, where Dover's powder and other preparations of opium were contra-indicated, and in every instance produced the desired effect. This experience, although limited, inclines me to believe that the sulphate may be regarded as a valuable sedative. And, unlike many others of that class, it is not followed by disagreeable sensations, nor derangements of the alimentary canal.

Monticello, Florida, Oct. 7, 1868.

ON SYRUP OF CHOCOLATE AS A VEHICLE FOR QUININE.

Editor Journal of Pharmacy.

SIR,—At the suggestion of Dr. C. R. Prall, of this city, I have prepared a syrup of chocolate as an excipient for the administration of quinine, and find it to answer the purpose so admirably and to disguise the taste of the quinine so perfectly, that I send it to you for publication, although our experience with it so far has not been satisfactory, as in one case in which it was given, the child, a girl of 14 years, took xxxii grs. of quinine in 48 hours, (combined in this syrup) without any effect for which it was given, viz., chills and fever. It was supposed from this that the chocolate so affected the quinine as to destroy its anti-periodic properties, so the physician discontinued its use, and gave the sulphate of quinia in pills. Since then, I have observed that a very small quantity of acid sulph. aromat., added to a solution of quinine in the syrup develops the bitter of the quinine intensely, the suggestion then arises, would it not be advisable to administer a small quantity of the acid or lemonade after the quinine and chocolate, to render it soluble in the stomach. None of the physicians I have mentioned it to have had an opportunity to try it since suggested, but will do so on an opportunity presenting. I advance the idea and let the profession follow it up, for it is decidedly the best excipient yet known for disguising the taste of quinine, and if it can be brought into general use, will be invaluable as a vehicle in the administering of quinine to children.

I prepare the syrup of the strength of two ounces of cake chocolate to the pint, shave the chocolate, mix it with the sugar and proceed as for simple syrup, but it is necessary to be very careful, or it will burn. One party that has tried making the syrup, has had difficulty in keeping it, as it will ferment. I have had no trouble in that way as yet. I use the full quantity of sugar and let it boil for five or ten minutes, and strain before it is cold.

Yours, &c.

JAS. KEMBLE.

Philadelphia, Oct. 6th, 1868.

THE PARIS EXPOSITION OF 1867.

By the Editor.

The powerful influence of exhibitions in ameliorating the condition of civilized peoples will hardly now be questioned. Beginning in towns and cities in reference to all branches of the mechanic arts, the fine arts, and horticulture they have extended into the country, and every county and state has its agricultural exhibitions. People are brought together in the presence of the best specimens of their productions, and whilst socially mingling with their fellows, imbibe ideas of improvements in various objects useful or interesting which they do or may render available for their own advantage. From these initial efforts in Europe came the grand idea of the Universal Exhibition for all countries, which was opened in the Crystal Palace, in Regents Park, London, with such wonderful success. Gathered there through the ubiquitous influence of Great Britain, were the natural products and the industrial and artistic creations of nearly the whole world, civilized and semi-barbarous. Coincident with this great collection of material objects, was the wonderful current of travel that set in towards the Metropolis from nearly all countries, which, perhaps more than any other feature of the Exhibition, tended to break down national prejudices and to make men appreciate the idea that they have a common origin and a common destiny, and however varied may be the allotments of Providence to nations and individuals, there are certain great lines of sympathy and principles of action which are sufficiently catholic to embrace the entire race of mankind.

Many of us can recall the "Universal Exhibition" held in New York in 1853, which, though a failure in its pecuniary aspect, did more for extending a knowledge of arts and manufactures in this country, than almost any other single influence of latter time. Then followed the Paris Exposition of 1855, the noble structure to accommodate which yet stands in the Champs Elysées, devoted as a museum of modern sculpture and painting. Next came the London Exhibition of 1862, and the Dublin Exhibition of May, 1868, and lastly the Paris Exposition of 1867, the most extensive and elaborate the world has yet seen, and the influence of which on the world will be felt long after the last traces of the exhibition have disappeared from the Champs de Mars. Having had the opportunity to a limited extent to glance over that wonderful collection, the inclination to say something about it has frequently recurred, but it has always been with the discouragement that presents itself when one undertakes to clasp an object too large for his grasp, or about which the most that could be said would be too little to convey an adequate idea of the endless variety and interest of the objects it contains. The only feasible plan is that of a regular correspondence during the period of the Exhibition, which shall involve not only the objects but many of the incidents, in a running commentary. In order that our pages may not be entirely without some record of this great collection, we have concluded to undertake this letter.

Previous to 1866, in the south-western quarter of Paris, the extensive level parade ground between the Ecole Militaire and the River Seine, towards the north-west, was known as the "Champs de Mars." Here the principal building itself occupied the centre, being a vast oval structure of iron, wood and glass, having an area of 35 acres, and 1640 yards or nearly a mile in circumference. Interiorly it consisted of a series of concentric ovals, the outer one being far the widest and highest with a central elevated gallery, reached by stairs placed at intervals, and from which a most excellent view of the various machinery and processes in operation in this department could be best seen, such operations being confined to this ring. The centre was occupied by an isolated building devoted to the collections of weights, measures and coins of the world, around which and within the first or smallest oval was an open court or garden ornamented with statuary and flowers. Then a series of avenues, named after countries, radiated from the central court to the circumference, so that it was easy to go from one part to another when the visiter became acquainted with the topographical outline. The *first* oval from the centre was devoted to the statuary, painting and engravings, die-sinking, lithographing, designs and models. The *Second* oval exhibited the apparatus and applications of the liberal arts, book printing, paper, stationary, photography, musical, medical, surgical and mathematical instruments and apparatus, maps and geographical and cosmographical apparatus.

The *Third* oval or group included furniture, upholstery, glassware, porcelain, earthenware, carpet, tapestry, and furniture stuff, paper hangings, cutlery, gold and silver plate, bronze and other artistic castings, clock and watch work, apparatus and processes for heating and lighting, perfumery, morocco work, fancy articles and basket work.

The *fourth* group, which embraces clothing and various objects worn on the person, includes cotton, flax and woolen fabrics and yarns, silk and silk goods, shawls, laces, embroidery, trimmings, hosiery, clothing made, jewellery and ornaments, travelling and camp equipages, portable arms and toys.

The *fifth* group more particularly interested the pharmaceutist, as it includes raw and manufactured products of mining industry, forest, fisheries, and agriculture, chemical and pharmaceutical products, products of applied chemistry in bleaching, dyeing, tanning leathers, &c.

The *sixth* group included apparatus and processes used in the common arts, such as mining and metallurgy, chemical and pharmaceutical apparatus, weaving, spinning machinery, tools of all kinds used in the mechanic arts, in agriculture, the chase, the fisheries, together with prime mowers, boilers and engines, etc. This vast collection was embraced in the central part of the large exterior oval, and when in active operation toward the middle of the day presented a scene of the most varied and interesting character, embracing as it did so many useful and curious arts and processes, from the plaiting of straw and the cutting of corks to the finest processes of the jeweller, watchmaker and lapidary.

The *seventh* group consisted of food, fresh or preserved in various states, such as the cereal grains, bread, pastry, fats, milk, eggs, meat, fish, condiments, sugar and fermented drinks.

The *eighth* group consisted of farm buildings, models and agricultural works, live stock, including horses, asses, mules, bulls, buffaloes, sheep, goats, pigs, rabbits, poultry, &c.

The *ninth* group related chiefly to horticultural buildings, and products.

The *tenth*, various articles exhibited with the special object of improving the physical and moral condition of the people, as apparatus used in instruction, improvements in furniture, clothing, dwellings, books, etc., having this object in view.

To get space for the immense number of articles sent that the main structure would not contain, numerous out-buildings were erected at the expense of the different countries wishing to occupy them, space being apportioned to each, and some of the most interesting processes and objects were to be found in isolated paths and avenues. In fact the visitor required a week to get a reasonably correct impression of the localities before any systematic examination of the Exhibition could be accomplished. The official catalogue, containing a mere enumeration of the articles deposited without any description, and not including many introduced later, embraces more than a thousand closely printed pages, while the special catalogues, gotten up by each country of any prominence, make a pile of voluminous pamphlets perfectly discouraging to any attempt at condensation. The objects of special interest to the pharmaceutist are so limited, when compared with the entire collection, that it has been thought feasible to give a few pages to their notice, and in the coming numbers we propose to introduce a few articles in continuation of this letter. W. P., Jr.

ON TINCTURA PHYSOSTIGMÆ.

By William Procter, Jr.

The tincture of Calabar bean (*Physostigma venenosum*) is occasionally prescribed in Philadelphia, and, not having seen a formula, the following is offered as affording the active constituents of this new remedial agent:

Take of Calabar beans, a troy ounce,
Alcohol, seven fluidounces,
Water, three fluidounces.

Reduce the beans to a fine powder in the mortar, mix the alco hol and water, moisten the powder with half a fluidounce of this menstruum, pack it in a conical tube (the neck of a broken retort), and pour on the remainder of the liquid until eight fluidounces have passed. Should the menstruum indicated not be sufficient, add more, until the measure of half a pint is obtained.

When needed to *calabarize* paper, evaporate two fluidounces to the measure of *three* fluidrachms with a gentle heat, and when cold filter. This solution is about equal to that recommended by Mr. Hanbury (Pharm. Journ., July, 1863), and the paper (which should be thin letter paper deprived of its size by boiling in water) is dipped in it and dried three or four times, which will impregnate the paper with a sufficient amount of the extract to perform the needed service when applied within the eyelid.

GLEANINGS—CHEMICAL AND PHARMACEUTICAL.

By the Editor.

Production of an alkaloid during the alcoholic fermentation. By M. Oser.—In fermenting sugar with washed yeast M. Oser obtained, besides alcohol, an alkaloid to which he attributes the formula $C^{26}H^{20}N^{4}$.

The chlorohydrate of this alkaloid crystallizes in hygroscopic scales, becomes brown in the air, and possesses a pungent bitter taste.

The author is assured that this alkaloid does not pre-exist in the yeast, but that it is formed during the fermentation. Attention has already been directed to the presence of trimethylamin in wine (see page 333).—*Journ. de Pharm.*, from *Journ. Prakt. Chem.*

Atropia an antidote to Opium Poisoning.—Dr. M. S. Buttles, of N. York, notices a case in the *N. Y. Medical Record*, for Aug. 15, in which opium poisoning was caused by the sub-cutaneous injection of half a grain of sulphate of morphia in a bad neuralgia. The lips became purple, the respiration seven per minute, no pulse at the wrist, but one sound at the heart; pupils contracted to a fine point, frothing at the mouth and cold extremities. The usual resuscitating remedies were tried, and among them artificial respiration, without avail, when Dr.

Charles A. Budd suggested the hypodermic application of sulphate of atropia, 1-60th of a grain of which was injected after breathing had ceased, and in fifteen minutes she showed signs of life, the pupils began very slightly to dilate, and in ten minutes more she began to breathe and the respiration rose to 12 per minute. The dose was repeated in half an hour, consciousness returned in fifty minutes, and the patient is now living.

Pharmacy in Tuscany.—The practice of pharmacy in Tuscany has been the subject of action of a government commission, charged with the care of the new sanitary code adopted in the kingdom of Italy. The practice is left free to competition in principle, but under the double guarantee of the diploma and governmental surveillance. This restriction to absolute liberty, such as it exists in England, appears to be in accord with public opinion, and does not favor the encroachments and inconveniences of the illicit sale of pharmaceutical products.—*Gaz. Med.*, and *Rep. de Pharm.*

Naphthaline to repel insects.—M. Eugene Pelouse proposes to employ naphthaline to protect plants from insects. It does not act as an insecticide, but is so disagreeable to them as to cause them to leave a plant upon which it is sprinkled. It is used in very small quantities and said to be very effectual.—*Jour. de Chim. Méd.*

Paraffine as a lubricant for machinery—The need of a lubricant for machinery with heated surfaces has caused a substance of the paraffin class, mélène ($C_{50}H_{60}$), to be suggested for this purpose by M. A. Monnet. It is volatile at 370° C. without change, has the consistence of wax ordinarily, but soon softens by the friction, and when it is much heated it is very fluid and unctious.—*Jour. de Chim. Méd.*

Paraffin to protect vessels in crystallizing.—M. Franz. Stolba, of Prague, suggest the use of paraffin as a coating to vessels of glass or porcelain when these are attacked by certain liquids to be set aside for crystallization. The paraffin is put into the capsules, previously well dried and heated till it commences to boil; the vessels are then turned about so as to bring the paraffin in contact with the whole of the interior surface and then empty out the surplus. After cooling it is found to hold well, and the vessels are ready for use; of course the solutions to be crystallized must not be heated, but left to spontaneous or vacuum evaporation.—*Jour. de Chim. Méd., Aout.*, 1868.

Lotion of glycerin and cantharides for the hair.

Take of aromatic spirit of ammonia	15 drams troy.
Glycerin	8 “ “
Tincture of cantharides from	2 to 4 “ “
Distilled rosemary water	20 ounces “ Mix.

To be applied to the roots of the hair by rubbing in small quantities once or twice a day to stimulate the growth.—*Jour. de Chim. Méd., Aout.*, 1868.

Prussian justice for adulterating medicines.—On the 23d of June, the court of justice at Berlin rendered judgment against a Prussian pharmacien, named Coehn, for furnishing bad medicines to the Prussian Army when in Austria, condemning him to five years imprisonment, a fine of 1000 thalers, suspension from his civil rights for six years and the loss of his license (concession) as a pharmacien.

Solution of Vleminckx for the itch.—This liquid, recommended by Vleminckx, is a solution of sulphuret of calcium made as follows:

Take of quick lime	one pound.
Water	q. s. to slake.
Sublimed sulphur	two pounds.
Water	twenty pounds.

Mix and boil until reduced to twelve pounds and filter.

The medicine is employed as follows:—The patient is put in a warm bath and remains there half an hour, then all the parts affected by the itch are rubbed with a piece of flannel dipped in the solution as above; and the patient returned to the bath for half an hour. The next day this treatment is repeated, and usually is sufficient to cure.

Professor Hébra, for women and persons with delicate skins, often employs the following mixture:—

Petroleum oil (Seneka oil),
Alcohol, of each an ounce,

Balsam of Peru, a drachm,
Oil of rosemary,
Oil of lavander,
Oil of lemon, of each 22 grains. Mix.

This physician employs the solution of Vleminckx for psoriasis, prurigo and sycosis.—*Bull. Ther. et Jour. de Chim. Méd.*

WHAT IS OPIUM?

By Dr. F. A. Flückiger, of Bern.

This question, in our days, will certainly be looked at as perfectly idle, both by practical pharmaceutists and chemists. The drug, indeed, is well known, and has been universally used since the earliest time, in fact for twenty centuries at least; while to no other product of the vegetable kingdom has so astonishing an amount of excellent chemical research been devoted since the days of that glorious discovery of a modest Hanoverian *Apotheker*, who the first evolved the idea that there are bodies existing which are thoroughly analogous to ammonia or potash, yet composed of organic elements. Every one looking over the rich chemical literature of opium published from the time of Sertürner (1816) to the recent delicate investigations of Smith of Edinburgh or Hesse of Stuttgart, may well be satisfied with a mass of analytical facts so interesting, useful and complete. The present text-books, indeed, display a very satisfactory knowledge of this important drug, albeit they leave a little doubt regarding some of its numerous constituents.

Yet, I venture to say, that science is far from having an exact idea of the nature of opium. The endeavors of so many eminent chemists having failed to supply a thorough acquaintance with the drug, I cannot hope to fill up at once this defect, but merely wish to make it evident, and to contribute some facts concerning the composition of opium, which have escaped the attention of former investigators.

Opium contains a dozen of more or less decidedly alkaline bodies, among which morphine and narcotine occur in the largest proportion. The former constitutes very rarely more than 20 per cent. of the dried drug and usually not more than 12 to 15 per cent; the narcotine on an average about 5 to 6 per cent.* The whole of the other alkaloids, namely, pseudomorphine, codeïna, thebaïne, papaverine, rhœadine, narceïne, kryptopine, and opianine, may be estimated at not more than 1 per cent. Thus the alkaloids amount at best to only ¼ of the weight of the dried-juice; and meconic and thebolactic acid, and meconine to nearly 5½ per cent. We may say, in fact, that allowing for the considerable discrepancies existing in the composition of opium, all the peculiar bodies found in it do not exceed one-third of its weight.

Now, what is the bulk of the remaining 66 per cent.?—However interesting, however important, both practically and scientifically, the first one-third may be, yet to have *a satisfactory idea of opium*, we require also to know exactly the nature of the other two-thirds. Most of the analyses of opium enumerate, in order to explain its composition, several very doubtful bodies besides the above-named principles. Among these, extractive, mucilaginous, and coloring matters occupy the first place. By successively treating with various liquids small quantities of opium, which alone admit of absolute exhaustion, we may separate its constituents into several portions. For the following assays I took a good Turkish opium containing 10 per cent. of morphine, which I finely powdered and entirely deprived of water. The first agent to which it was submitted was benzol. After the action of this liquid the powder was dried, without removing it from the funnel, weighed and then exhausted in the same filter with absolute alcohol. When it yielded nothing more to alcohol, the powder was dried and weighed again as above, and then exhausted with cold and hot water, with acetic acid, and with ammonia. Lastly, the residue was examined microscopically. It consisted of fragments of the poppy capsule, which now had become very obvious.

The benzol solution on evaporation yielded the narcotine and caoutchouc, which may be separated by acetic acid. Fatty matters occur, but only in slight traces.

Alcohol takes up the largest bulk; nearly all the bodies enumerated at the outset as peculiar to opium* are contained in the alcoholic tincture, and besides them sugar, a very small quantity of resin, and coloring matters. This portion of opium, representing the largest part of it, appears certainly to deserve the most attentive examination. I am sorry to state that I have not yet succeeded in isolating from it any new principle in a state of sufficient purity. The coloring matter, for instance, is extremely alterable.

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* I had the opportunity of examining a German opium from Biltz, Erfurt, which yielded 11 per cent. of narcotine,

Water dissolves chiefly *mucilage* from powdered opium, which has been previously exhausted by benzol and alcohol. The mucilage is precipitated by neutral acetate of lead, but not by silicate of soda; I have *not found in opium any gum analogous to gum arabic.* This fact, if confirmed by the examination of large quantities of good commercial opium, would enable one to say that any opium containing gum must necessarily be adulterated.

After the action of the water, acetic acid removes some salts and a little coloring matter, all in small proportion.

Finally, ammonia acts very manifestly upon the residue of the preceding operations. The powder swells and yields a brown liquid, which, being viscid, cannot easily be filtered. On the addition of an acid, of alcohol or even of chloride of sodium, a thick jelly at once separates. The *pectic acid*, thus obtained, has not yet been found by other observers, as far as I can see, though I think that it must henceforth be considered as one of the regular constituents of opium. I met with it in several sorts of the drug which happened to be at my disposal and likewise in a good standard opium from Asia Minor, for which I am indebted to Mr. E. Merck, of Darmstadt, who furnished me with the residues of the drug, which had been previously exhausted by hot water and by hydrochloric acid. It would be interesting to examine in this respect the various Indian opiums, which I presume to be of a somewhat different composition. From all the various reports on them, it appears that the Indian juice is more fluid than that collected in Asia Minor. Does this partly depend upon the absence of pectic acid or of mucilage? This investigation must be expected from chemists having at their command considerable quantities of the residues of genuine opiums; they may state whether I am correct in saying that a pectic body must have a place among the normal constituents of the poppy juice.

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* Narcotine only excepted, as it has been met with in aconite tubers by Messrs. Smith.

After the treatment of the opium with ammonia, water is without any action upon the residue, which does not even swell; I consequently cannot agree with those chemists who admit *bassorine* as one of the principles of opium.

Examined under the microscope, the opium powder thus deprived of all soluble matters, shows very distinctly that it consists now exclusively of fragments of the capsule, which by incineration yield some ash, but not the whole amount of it, the inorganic salts having been already partly removed by alcohol, water and acetic acid. Among them a comparatively large proportion of alkaline sulphates, as well as of sulphate of lime is always met with. Sulphuric acid is set at liberty, if the precipitate obtained by neutral acetate of lead is decomposed by sulphuretted hydrogen in an alcoholic solution, which causes the mucilage to be precipitated.

In the manner indicated I completely exhausted 10 grammes of good Turkish opium successively with the above liquids, devoting about a week to this task. The results will, I hope, clearly show which direction should be followed, in order to promote our knowledge of opium. It is that part extracted by alcohol which contains the constituents not yet known, and upon which further researches, which I hope to institute, may probably throw some light.

The following numbers, calculated for 100 parts, were obtained. The opium yielded—

To benzol, .	10·83=	4·50 narcotine and 6.33 caoutchouc, with traces of fatty matter.
" alcohol, .	57·67	representing about 20 per cent. OF UNKNOWN BODIES.
" water, .	9.67	of mucilage.
" acetic acid,	1·73	salts, a little pectic acid and coloring matter.
" ammonia,	7·33	pectic acid, reddening litmus.

By incineration	10·38	per cent. were burnt (cellulose), leaving
	2·39	ash; the whole amount of the ash in the drug under examination being equal to 5·32 per cent., when it was directly burnt.
	100·00	

I have observed that the pectic acid is not obtained immediately in a pure state; it appears to be always accompanied by some of the so-called humic bodies. Yet by dissolving it again in ammonia and precipitating by alcohol, it at last becomes nearly colorless and devoid of inorganic matter. It is always very difficult to powder; when heated, it evolves acid vapors, but in a less pure state it retains some albuminous matter yielding then ammoniacal vapors.

The purified pectic acid, when thoroughly boiled with water, partly forms a jelly, which at first is almost imperceptible, being perfectly colorless and transparent. Neutral acetate of lead somewhat thickens it, without any turbid appearance; an abundant precipitation takes place only on addition of ammonia.

The properties of pectic matters are known to be liable to some change; I found that sometimes the pectic acid is not immediately separated from the ammoniacal solution on addition of acetic acid, but requires the addition of alcohol.

I was curious to know whether pectin must be considered a constituent of the juice of the actual poppy-head or the capsule itself. An assay made with nearly ripe capsules showed that they do not contain any pectin—at least I could not obtain it in the same way as I did from opium. A very considerable proportion of pectin, however, (22 per cent.) has been found in poppy *seeds* by *Sacc.**

Mr. J. D. Smith called attention to a very interesting specimen of English opium, collected about twenty years since by Sir Roger Martin, at Burnham Westgate, in Norfolk. Mr. Spencer, chemist, had kindly sent this for inspection. It was a mass weighing some pounds, and excited much admiration of its apparently excellent quality.—*Lond. Pharm. Jour.*, *Oct.*, 1868.

* Annales de Chimie, et de Physique, xxvii. (1850) 473.

ON HONEY, ITS FORMATION AND CHANGES.

By W. W. Stoddart, F.G.S.

Honey and wax, the produce of the well-known insect (*Apis mellifica*), have been household words with the apothecary from time immemorial. That they are of importance to the modern pharmaceutist is evident from their being essential ingredients in no less than twenty-six preparations of our Pharmacopœia, to say nothing of the "thousand and one" uses in domestic life. The consumption in England is something enormous; besides what is gathered in this country, more than 450 tons are annually imported. It, then, becomes of some importance to the dispenser that he has a good and pure article, which I am sorry to say is not always the case. It is bad enough that a dishonest tradesman can find a cheap and adulterated stock ready at hand, but it is far worse when an honest tradesman has to keep all his wits about him to prevent the unconscious reception of a spurious substance.

For several years past the author has paid attention to the natural history and chemistry of honey, and has already published a few observations. As little is known on the subject, a continuance and confirmation of them will perhaps be thought worth recording.

On turning over the works on honey, you will find that not only do the authors contradict each other, but even sometimes themselves. Fownes, Turner, Gregory, and others state "that the solid part of honey is grape sugar," but tell us nothing of the liquid. Johnstone, in his "Chemistry of Common Life," says, "Both the solid and liquid portions have *the same general properties*, and that both are equally sweet." Dr. Hassall, in his work on "Food and its Adulterations," says "that the solid part of honey, when examined, shows myriads of regularly-formed crystals, *identical in form with cane sugar*." This probably is a misprint. The best account, though a brief one, is that in Dr. Attfield's "Pharmaceutical Chemistry."

The author's experiments serve to show that there are three principal sugars in the honey of the shops, varying their proportion according to age; and, as will be noticed further on, that all these are derived from the decomposition of cane sugar, or sucrose ($C_{12}H_{22}O_{11}$).

Sucrose, when pure, forms very fine, large, oblique, rhombic prisms, and crystallizes in masses, as well seen in sugar candy. When the crystals are small, as for microscopic observation, they generally crystallize on their sides, when they appear as if the ends were truncated, and the edges at right angles to each other. This is simply owing to their position. A solution of sucrose always turns a ray of polarized light from left to right, and is therefore commonly called right-handed sugar. When acted upon by nitrogenous matter, as that in fresh honey, this crystallizable sucrose becomes partly changed into uncrystallizable sugar, or inverted sugar, because it turns a polarized ray of light from right to left.

Freshly gathered honey contains both of these, mixed with a third kind of sugar, especially when kept for a few weeks,—viz., glucose ($C_{12}H_{24}O_{12}$) or grape sugar.

Glucose is a crystalline substance, possessing about one-fourth the sweetening power of sucrose. It crystallizes in small tufts of thin prisms, pointed at both ends. The crystals, when formed for the microscope, always have *pointed* ends, instead of the *square* ones before mentioned, and owe this peculiarity simply to position also. This property is of great assistance to the micro-chemist when examining saccharine substances.

We will now pass on to the formation of honey as found in a newly-made comb. On examining the disk of many flowers, a number of glandular or scale-like bodies may be seen, abounding in a sweet liquid when the flower is at its height of beauty. Many plants, as the *Ranunculus* and *Fritillaria*, have a small glandular cavity at the base of the petals, filled with the same fluid, but not so plentifully as those on the disk. This fluid is commonly termed nectar, and therefore, in the older botanical works, the part of the flower supplying it was termed the nectary. This sweet fluid is a true sugar-syrup, eliminated from the amylaceous sap of the plant, and its office is probably to afford nourishment to the stamens and pistil. The so-called nectary serves the purpose of a reservoir for the superabundant fluid, and excites the instinct of the bees.

These singular insects choose many plants preferably to others, and, what is stranger still, a bee only attacks the same kind of flower in a garden at each visit, although surrounded by hundreds of others. This may be easily proved by examining a bee on its return to the hive, when the pollen will be seen to be all of one kind. The plants that have been noted as being the greatest favorites are—

Borago officinalis.
Brassica campestris.
Colchicum autumnale.
Erica cinerea.
E. tetralix.
Cheiranthus Cheiri.
Althæa rosea.
Reseda lutea.
Ribes Grossularia.
Rosmarinus officinalis.
Tilia europæa.
Corylus Avellana.
Ribes nigrum.
Ulex europæus.
Lonicera Periclymenum.
Echium vulgare.
Thymus Serpyllum.
Rubus Idæus.
R. cæsius.
Rosa canina.
R. rubiginosa.
R. arvensis.
Sarothamnus scoparius.
Melilotus officinalis.
Cratægus Oxyacantha.
Salix (various).
Polygonum.
Menyanthes trifoliata.
Trifolium repens.
T. pratense.

besides innumerable others.

The local flora has the greatest possible influence on the taste, color, and other qualities of the honey of the neighborhood. For instance, that from the sandy districts of Worcestershire and Salisbury Plain has a rich golden color, while that from Wales and the suburbs of Bristol has a dark, dirty-brown color, and coarse taste.

On examining the sap of many immature flowers, it was found to give a distinctly bluish color with iodine, showing the presence of starch. After the lapse of twenty-four hours, the sap was sweetish, and iodine now only gave a dirty greenish-brown color. The highest degree of sweetness was just when the flower fully expanded.

The next step was to find out what the sweet matter was. The part of the petal or disk, according to the flower, was sliced, macerated for a short time in a little cold distilled water. The liquid was then heated with lime and carbonic acid, filtered, and evaporated *in vacuo* over sulphuric acid, on a glass slip.

Some of these results I have on the table before you. The crystals are from *Cheiranthus Cheiri*, *Lonicera Periclymenum*, *Trifolium pratense*, and *Rosa canina.* They are very difficult to separate, owing to the very rapid change into glucose by the chemical addition of a molecule of water. The angles are very decided, and measure 90° and 134·25°. They are very beautiful objects for the polarizing microscrope, and are most decidedly pure sucrose.

The bee, then, led by instinct to the favorite plants, inserts its ligula into the corolla, and laps up the sacchiferous liquid, and passes it into the honey sac. The ligula is not, as was once supposed, a hollow tube, through which a liquid may be sucked, but is a solid, flexile organ, covered with circlets of hairs. Like the palate of a mollusk, it is simply retracted into the mouth, and wiped, as it were, by the fauces.

While retained in the honey-bag, it receives the addition of an acid which possesses all the reactions of formic acid. It is probably this that causes the peculiar tingling sensation in the throat that is frequently experienced when much honey is eaten. The formic acid may perhaps be the result of the decomposition of the sugar, thus—

$$\underset{\text{Cane sugar.}}{C_{12}H_{22}O_{11}} + 14\ O = \underset{\text{Formic acid.}}{10(HCHO_2)} + 2\ CO_2 + H_2O.$$

On arriving at the hive, the bee deposits the contents of the honey-bag into the comb, where it remains till the stock is taken.

At this stage, honey is a clear, thick, yellowish liquid, having a sp. g. 1·423, and does not give a blue with tincture of iodine.

After collection, this honey gradually thickens, and deposits crystals, becoming rather opaque. A bit, placed under the microscope, will be seen to consist of a mass of regularly-formed crystals, floating in a clear liquid, and interspersed with pollen-granules. These crystals are those of dextro-glucose; they are very thin and transparent, and the measurement of their angles is 120°. They are evidently derived from the gradual decomposition of the sucrose.

This transformation proceeds from day to day till the honey is a solid mass of crystals, and is then said to "set." After a time, say twelve months after being gathered, so much is changed into masses of glucose crystals that it "candies."

The glucose itself begins to ferment and form other compounds. The examination of a little under the microscope now shows tufts here and there of acicular four-sided prisms, which are the hexatomic alcohol, mannite.

$$\underset{\text{Grape sugar.}}{C_{12}H_{24}O_{12}}+H_4=\underset{\text{Mannite.}}{2(C_6H_{14}O_6)}.$$

Decomposition goes further still in very old or badly-kept honey; fermentation sets in, carbonic acid is given off, and alcohol, with acetic acid, will be distinctly perceived.

$$\underset{\text{Glucose.}}{C_{12}H_{24}O_{12}}=\underset{\text{Alcohol.}}{4\,(C_2H_5H\,O)}+4\,CO_2.$$

Then afterwards—

$$\underset{\text{Alcohol.}}{C_2H_5HO}+O_2=\underset{\text{Acetic acid.}}{C_2H_4O_2}+H_2O.$$

The fluid part of old honey is lævulose, or left-handed glucose. It is uncrystallizable, and turns the polarized ray to the left instead of the right.

The pollen-grains may be easily separated for examination by dissolving a little honey in a few drops of distilled water put into a conical glass. They collect at the bottom, very little altered, and ready for transferring to the usual glass slip.

From all that has been said, therefore, honey is originally formed from a solution of cane sugar (sucrose), which gradually changes into grape sugar (glucose), and forming, as it proceeds, a small portion of mannite, formic acid, and alcohol.

The color and flavor are both due to, and derived from, the aroma of the flowers which the bees have visited.

Such ought honey to be; but, alas, like other things, the adulterator has found it a good field for his exertion. I have often examined specimens adulterated with pea- or bean-flour, turmeric, pipe-clay, brown sugar, treacle, gypsum, yellow ochre, fine sand, and water. (On the table were specimens of pipe-clay, yellow ochre, gypsum, and sand, that had been separated from honey bought in Bristol and London.)

Following are four analyses of samples that were actually bought and sold:

No. 1.

Brown Sugar,	15·85
Honey,	84·15
	100·00

No. 2.

Pea- or bean-flour,	18·7
Honey,	68·8
Water,	12·5
	100·00

No. 3.

Honey,	94·9
Pipe-clay,	4·7
Turmeric,	·4
	100·00

No. 4.

Sulphate of lime,	6·3
Sugar,	12·5
Honey,	81·2
	100·00

Sugar is easily detected by the microscope, for not only are the crystals easily distinguished, but generally the sugar-itch insects occur in the field of vision in great number, and in all stages of growth.

I believe, however, that a great deal of honey is imported from the Continent that is largely adulterated with starch-sugar; this being so nearly identical with the true glucose of honey itself, the imposture is almost impossible to prove satisfactorily.—*Lond. Pharm. Journ.*, Sept., 1868.

SIPHON MEDICINE GLASSES.

By Barnard S. Proctor.

There are probably few pharmaceutical fathers who have not felt that the system of choking medicine into a child was a barbarous and sometimes even a dangerous mode of overcoming the infant's repugnance to physic, and that the old-fashioned, covered medicine spoons were instruments of torture, the use of which should be punishable as a crüelty to animals. Such have been my feelings, and in the bringing up of four children I have repeatedly endeavored to devise some means of removing this disgrace upon the art of physic-taking. But I need not tell of my failures, but proceed at once to that which has been pronounced by mother, nurse and doctor to be worthy of general adoption.

The little fellow whose necessity was the mother of my present invention commenced life with an imperfect action of several of the viscera which more than once threatened his life, and rendered it necessary to have very frequent resort to the aid of medicine; but the convulsions and congested state of the lungs to which he was subject would at times make it a matter of some danger to give him either food or physic, for fear of a fit of choking putting a stop altogether to the process of respiration, which he already had a struggle to maintain. When at the worst, food and medicine alike had to be given by allowing him to suck them out of a cloth which had been dipped into them; the moisture being grateful to his parched mouth, no doubt made him willing to take whatever was given him in that way, and as he recovered the ability to take his food in the true infantile fashion, we gave him physic upon the same principle, trusting to the instinctive disposition to suck being sufficient to overcome his repugnance to the taste. The tube of a Gilbertson's feeding-bottle broken short and fitted into a cylindrical minim measure, was the form adopted for our first experiment, and it was with much satisfaction that we found whatever was given in this way was taken not only without difficulty, but often with positive eagerness. Rhubarb mixture and castor-oil were alike acceptable, if only offered when the stomach was empty. I have consequently had graduated glasses made of a suitable size and shape, and fitted with cork, tube, and teat, which it is scarcely necessary to describe more particularly. The following are the advantages of administration with this glass over the old plan of giving medicine with a cup and spoon:

1. The glass being accurately graduated, the dose may be measured with correctness and facility.

2. The medicine being in a deep vessel, is not liable to be spilled.

3. The glass being corked, the child does not smell the medicine, the odor of which, if given in the old way, will often produce a feeling of disgust before a drop has entered the mouth.

4. The medicine being conveyed to the back of the mouth through the tube and teat, it is less tasted.

5. The tube descending to the bottom of the glass, any heavy

materials are sucked up first, and made sure of, while by the old method they are apt to be left behind in the cup or spoon.

6. The act of sucking being instinctive, there is no choking nor sputtering, consequently no loss of medicine, nor uncertainty as to how much has been taken, and no soiling of the infant's or nurse's clothes.

7. A dose may be given to the infant while asleep, without its being roused, the application of the teat to its lips being generally sufficient to make it suck in its sleep.

It has been thought that adults should not be entirely excluded the benefits of anything which facilitates or felicitates the deglutition of drugs, for it is astonishing how many a man will behave himself like a baby when he has a dose of Gregory under his nose; nor yet is it to the weak-willed specimens of their species only that the adult's siphon medicine glass will commend itself. It is simply an acid tube fitted to a graduated glass of a deeper pattern than usual, and may be used with convenience and advantage wherever an acid tube is required.—*London Pharm. Journ.*, Sept., 1868.

ON THE PHYSIOLOGICAL ACTION OF PAPAVERINA.

Dr. Hofman, after taking two grains of the muriate of papaverin, remained awake fifteen hours, fell asleep at one A. M., and slept only five hours. From four grains remained awake fourteen hours, and then slept six and a half hours. From six grains experienced violent hiccough, which ceased in ten minutes; tongue became moderately coated, and had discomfort in stomach; half hour after dinner was attacked with severe pain in the forehead, without confusion of ideas, or debility, all of which passed off after a short walk; in fourteen hours he fell asleep and slept six hours. Felt perfectly well on the following and succeeding days. He then took six grains more, with only slight disturbance of the stomach. His pulse fell from eighty-eight to sixty-four, respiration from thirteen to eleven; his temperature remained about thirty-five or thirty-six degrees centigrade. He concluded that papaverin does not cause the slightest inclination to sleep, or relaxation of the muscles, and hence is useless in sleeplessness, cramps, and convulsions. That it has no accumulative or secondary effects; that it does not act upon the senses like other narcotics. That it affects the pulse, respiration, and temperature, but slightly. It does not constipate, nor lesson nor prevent the secretion and excretion of urine, nor of the urates of chlorides.

He suggests that it may prove useful in some affections of the stomach and head when it is important not to run the risk of causing constipation or nausea; but that it is almost as useless as narcein.—*New York Medical Gazette*, Sept. 5, 1868, from *Wiener Med. Wochen*, July 18, 1868.

A TROPICAL AIR-PLANT.

By Charles Wright.

A wonderful tree—if a tree it can be called—grows throughout the West India Islands, in South America, as far south as Brazil, and perhaps in Florida. It is not remarkable for its beauty, nor its great size, but for its irresistible power of destroying other trees.

It is an epiphyte (*Clusia rosea* Linn.), perhaps a true parasite. Whether it ever germinates in the ground I know not; nor do I know why it should not, if it can sprout from a woodpecker's hole in a palm. Certain it is, that of hundreds which I have seen, I never saw a young plant attached to the soil. It grows on many kinds of trees, and at almost any height above the earth. In some situations it grows feebly. On a palm, it never or rarely attains to any considerable size; whether there is an incompatibility between the two growths, or whether, as is commonly the case on those trees, it germinates at two great a height. On the spreading branches of a tree it thrives better, but seems there to be not in its proper place. In any case, its main development is downward. When on a branch remote from the trunk, the descending axis—root or trunk, whichever it may be—is like a cord, increasing to the size of a rope, or a hawser, or growing even larger; rarely branching, but, sometimes, near the ground sending off stays. The ascending axis makes little more than a bush, while the root may be thirty or forty feet long.

In one respect, this is like a true root,—it branches irregularly,—while on the ascending trunk the leaves and branches are in pairs.

In order to attain its full development, it seems necessary that it should germinate at a point from which the descending axis shall pass in proximity to the trunk of the tree; and, it has seemed, that if this point be very high, it is a circumstance unfavorable to its rapid growth.

Supposing, then, our plant to start under favorable auspices, not very high above the ground, and from a hole or a fissure in an erect trunk, the ascending stem presents nothing of special interest, but the root, passing down near the foster-tree, is most singularly affected by it. It would seem as if possessed of a most grateful affection for that which gives it support; so much so, as to multiply arms with which to embrace it. It sends off, from time to time, at irregular distances, from one side or the other, slender, almost thread-like branches, which pass horizontally around the tree, till they meet on the opposite side and unite; or, it may be, if two should *not* meet, they would pass entirely round it and unite again with the main root. On this point I either made no careful observations, or my memory is at fault. Gradually the forest-tree is embraced by succession of these cords. But, by the same regular growth, these cords spread upward and downward, till they become hoops. And these hoops often send off branches from one to another; and these in their turn widen, till the tree is inclosed in a living cylinder or a cylindrical network of bands, having immense strength; and as these seem to increase only laterally, the growth of the tree is checked, and its destruction is inevitable sooner or later, according to its less or greater power of endurance.

A tree, on which the Copey has woven a pretty complete net, cannot long retain its vitality. Its circulation is stopped and it dies. But this *seems* not to check the growth of the destroyer, so long as the trunk remains erect. But when they both fall, the parasite cannot long survive. It would seem that it required either elevation or an erect position for its existence.

I can recall to mind but one instance of a Copey growing from the ground, and it is probable that in this case the place whence it started was low, and it had time to reach the soil and fasten its roots there before the death and decay of its foster-parent.

Copey is, probably, the aboriginal or Carib name of the plant, which, like many others, has been retained. Scotch lawyer, or Scotch attorney, by which name it is known in Jamaica, is not altogether flattering to legal gentlemen of Caledonian extraction.—*American Naturalist, Sept.* 1868.

SPIRITUS ÆTHERIS NITROSI.

By J. W. Mill.

Spirit of Nitrous Ether—Sweet Spirit of Nitre—Its preparation on the Small Scale.

The history of this preparation has already been given in the London *Pharmaceutical Journal*, July, 1865, by Mr. Robert Warrington, and in the same journal, March, 1867, by Prof. Theophilus Redwood. Both articles were reprinted in the *American Journal of Pharmacy*, Vol. xxxvii., page 354, and Vol. xxxix., page 321; and to them the interested reader is referred.

The object of this paper is to give a formula and process adapted to the successful production of sweet spirit of nitre on the small scale. The preparation of this valuable remedial agent is confined almost entirely within the laboratory walls of the large manufacturing chemists. Hardly one pharmacist in a hundred ever dreams of preparing it himself; the great majority preferring to purchase this, as they do nearly all preparations, in fact, except the very simplest, at the hands of the large manufacturer; this method of keeping up stock being the easiest, and considered cheapest, attended with less trouble and responsibility. The writer, however, deprecates this growing disposition of the craft to surrender to the large manufacturer the preparations of its compounds. Such a course tends more and more to commercialize pharmacy, and if not checked, will soon make of it a *mere* trade, requiring for its successful prosecution a knowledge only of the rules and method of ordinary business.

As an offset to this growing tendency, the present paper is contributed; and it is hoped that some, particularly the younger, members of the profession, may be influenced by it to attempt the preparation of something higher than syrup squills or paregoric elixir.

Hyponitrous ether—an alcoholic solution of which, of definite strength, constitutes the officinal sweet spirit of nitre—is a product of the oxidation of alcohol by nitric acid, and is obtained by distilling a mixture, in certain proportions, of these two substances. Modern processes for the preparation of sweet spirit of nitre do not contemplate the preliminary and separate production of the ether, but obtain it more or less diluted from the beginning. In the experience of the writer, however, the separate production of the ether, and its subsequent dilution to the proper degree with alcohol, is the most correct process, and in fact the only one adapted for use on the small scale. This method is the one recommended by the Edinburgh Pharmacopœia of 1841, and also some years previously by Dr. Hare. The formulas, however, as given by these two authorities, are not practicable working formulas; Dr. Hare's, on account of the indefiniteness of its directions, and that of the Edinburg Pharmacopœia, on account of its requiring the use of a nitric acid having the specific gravity 1·5—a strength, practically unattainable, and moreover too great for the purpose, causing the reactions to take place with such violence as to be unmanageable. It is for this reason mainly, I presume, that the formula has been discarded; it is, nevertheless, the best that has yet been devised for the production of spirit nitrous ether on the small scale, and with certain modifications is perfectly manageable, and can be executed by any one who has been properly educated to his business.

The apparatus consists of a generating bottle—an ordinary pint salt-mouth shop bottle, capable of holding eighteen fluidounces (a smaller will not answer—a larger is not necessary); a water bath—an ordinary tin can, about the same height as the generating bottle, and an inch or inch and a quarter larger diameter, and having in the bottom two bits of wood on which the generating bottle rests, to prevent breakage by heat; a safety tube (a thermometer is instructive, but is not necessary);

a conducting tube; a Liebig's condenser, two and a half inches long, made of ordinary sheet tin, painted, to keep it from rusting—the internal tube of glass, three-quarters inch in diameter, and at its lower extremity drawn to a point, so as to enter the receiving bottle; an ordinary pint packing bottle; a reservoir of ice-water, fitted with a stop-cock; a retort stand; a lamp.

THE PROCESS.—No. 1. Take of Alcohol (sp. gr. 835) a sufficient quantity; stronger alcohol, eight fluidounces; nitric acid (sp. gr. 1·42), six fluidounces; carbonate of potassa, half a troy ounce. Or if nitric acid sp. gr. 1·42 can not be obtained, then take of—

No. 2. Alcohol (sp. gr. 853) a sufficient quantity; stronger alcohol, twenty-one fluidounces; commercial nitric acid (sp. gr. 1·36), seven fluidounces; carbonate of potassa, half a troy ounce.

Introduce into the generating bottle, *with a little clean sand*, thirteen fluidounces of alcohol, sp. pr. 835, if formula No. 1—stronger alcohol if formula No. 2 is used—and three fluidounces of the nitric acid. Having filled the safety tube with nitric acid, and otherwise properly adjusted the apparatus, apply heat. As soon as the reaction is fairly established, withdraw the water from the bath, and allow the reaction to proceed spontaneously, which it does to the end, care being taken to add the remainder of the acid through the safety tube in small portions, only, at a time, and at such intervals as to maintain the reaction in moderate activity. Distillation having ceased, remove the distillate (nearly ten fluidounces), and add to it first the carbonate of potassa, and then twice its volume of water. The mixture having been well shaken, by means of a separating funnel, separate the supernatant ether (about five fluidounces), and add to it eight fluidounces stronger alcohol, and sufficient alcohol (sp. gr. 835) to make the measure up to one hundred fluidounces, or to such a point that the finished product will correspond, in ethereal strength, to that indicated by the U. S. Pharmacopœia. Finally, preserve the spirit in well stopped bottles.

Although, as before stated, a thermometer is not necessary to the practical success of the operation, the observation of the thermometric changes occurring during the process is instructive, and shows that the temperature at the commencement of the reaction is 170°, falling as soon as the reaction is in full activity to about 164°, in the vicinity of which it remains till near the close, when, simultaneous with the stopping of distillation, the temperature gradually rises to nearly 190°. The ether obtained by the above process has a sp. gr. at 56° of ·910, and usually amounts to very nearly five fluidounces ; this, diluted as directed, has the sp. gr. ·837, and contains the percentage of ether required by the Pharmacopœia. It is as little affected by the liquor potassæ test as the *best* samples in the market ; is equal to them in ever particular, and can be prepared at a less cost than the price asked for them. The process is easy of execution, and produces definite results ; the apparatus is simple, compact and inexpensive, and not, with ordinary care, liable to fracture. With it the apothecary can readily prepare a sweet spirit of nitre that he can conscientiously dispense, and not be dependent on the market for his supply of this important remedy.—*The Pharmacist*, *Sept.*, 1868.

ON PURE WHITE GUTTA PERCHA.

By F. Baden Benger.

The demand for this substance, for dental purposes, is now sufficiently established to justify me in making a few remarks on it and its preparation. I have examined specimens of the so-called "pure white gutta percha" now commonly sold, and find that for the most part they may have been designated almost as correctly "pure white oxide of zinc," being made up with this substance in very large proportions, and I believe thereby rendered less tough, durable and fit for the purpose ; this opinion has been strengthened by the fact that persons to whom the pure and afterwards the commercial article have been supplied, have frequently complained of the inefficiency of the latter. I am further induced to describe the process I use, by the very high price required by makers of the really pure substance.

A good sample of crude gutta percha will yield at least 75 per cent. of the pure resin. Some care should be taken to obtain a specimen with as little impurity as possible. The bottle marked

No. 1 contains some of the kind I find best; it is imported in roundish blocks, which are exceedingly hard and difficult to cut, but any of the large gutta percha manufacturers will supply the same torn into fragments similar to the accompanying specimen. Four ounces of this digested with five pounds of methylated chloroform for a few days, will form a solution sufficiently fluid to filter through ordinary bibulous paper; this should be conducted in such a manner as to allow little or no loss of chloroform by evaporation, the apparatus for filtering volatile liquids described in Mohr and Redwood's "Pharmacy" answering the purpose; the addition of another pound of chloroform rendering the filtration more expeditious. To the filtered solution, which should be bright and nearly colorless, add an equal bulk, or a sufficient quantity of spirit of wine to precipitate the gutta percha, which will separate from its solvent as a white bulky mass; this should be rinsed with spirit, pressed in a cloth, and dried by exposure to the air; its condition is then that of the accompanying specimen, marked "No. 2," perfectly white, but too porous for dental use; it should then be boiled for half an hour in a porcelain capsule and rolled in sticks whilst hot, as specimen "No. 3." The chloroform can now be separated from the spirit by the addition of water, and lastly the spirit from the water by distillation, at the leisure of the operator.

There is, therefore, no reason why the chemist should not prepare this substance himself, and if he is careful to prevent the loss of chloroform and spirit in the process, its reduced cost and greater purity will compensate him for the trouble.—*London Pharm. Journ.*, Sept., 1868.

NOTE ON THE DETECTION OF PHOSPHATE OF LIME IN SUBNITRATE OF BISMUTH.

By Dr. Redwood.

In a brief notice I gave, in the last number of this Journal, of the adulteration of subnitrate of bismuth with phosphate of lime, I alluded to a test recently published by Mr. Roussin. I am informed by Messrs. Howard and Sons, of Stratford, that they have found this test fallacious, as continued boiling causes a precipitate of bismuth itself when no phosphate is present. They suggest the following modification of the test, by which they say one-third of a grain of phosphate of lime is easily detected:

"To one part of the salt of bismuth dissolved in weak nitric acid add two parts of citric acid; dissolve with the aid of a little water; add an excess of solution of ammonia, and boil. Any phosphate present will be thrown down with continuous boiling of the solution."

Although absence from home prevents my adding my own experience on the subject, I am anxious, on the unquestionable authority of Messrs. Howard, at once to guard those who may have been induced to use Mr. Roussin's test against the erroneous conclusions to which it appears it may lead. In the cases referred to in my former note, I had obtained evidence of the adulteration indicated by other and perfectly trustworthy means before my attention was directed to Mr. Roussin's test.—*Lond. Pharm. Journ.*, Sept., 1868.

FACILITIES FOR DISPENSING MEDICINE.

By Henry Biroth.

The position held towards the public by the apothecary is an extremely difficult one. His qualifications entitle him to the first rank of society; but while the public expects that he should have all the qualifications necessary for the proper performance of his duties, it by no means extends to him commensurate praise. Courteousness and affability, conscientiousness and accuracy, are but a few of the qualifications that are demanded of the pharmacist. To fill his position to the general satisfaction he should be a model of talent and virtue. As the compounding of prescriptions is the true object of pharmacy, all other tasks and efforts being but expedients for attaining this end, it is requisite for the apothecary to possess cleverness and activity in preparing prescriptions. In appending the following, I therefore believe I can offer him some facilities which will prove both time- and labor-saving.

1. *A Solution of Sulphate of Quinine in Sulphuric Acid.*—Take of sulphate of quinine one ounce, mix with eight ounces

of water, then drop carefully into it concentrated sulphuric acid, and stir until the quinine is dissolved; then add sufficient water to make the whole measure ten fluidounces. Ten parts of this solution will represent one part of quinine.

A similar solution may be made with aromatic sulphuric acid.

2. *A Solution of Nitrate of Silver.**—The exact weighing of nitrate of silver in small quantities is very difficult, and takes up a great deal of time, which in dispensing is of great importance. The solution is made by dissolving an ounce of nitrate of silver in sufficient distilled water to make it measure ten fluidounces. This solution has to be kept in dark-colored bottles, to prevent its decomposition by light.

3. *A Solution of Chloride of Zinc.*—Chloride of zinc, being a deliquescent salt, will soon become unfit for weighing by using it often. The solution is made in the same way as the above, by dissolving one ounce of chloride of zinc in sufficient distilled water to make it measure ten fluidounces.

4. *A Mixture of Strychnia with Sugar.*—This is an important mixture, as strychnia can not be too carefully handled. Doses of one-twelfth, one-eighth or one-quarter of a grain can not be weighed with as much accuracy as when mixed with sugar; the lightest breeze of air often affecting the correctness of the scale. One drachm of strychnia mixed with sufficient white sugar to make the whole weigh twelve drachms, is a convenient mixture in most all cases where small portions of strychnia are prescribed.

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* [The propriety of this recommendation for nitrate of silver, may be doubted—except in those cases where the demand is very frequent. With the utmost care it will be difficult to prevent access of organic matter, and the salt is so easily dissolved that a mortar is not needed.

The strychnia mixture is another instance of doubtful propriety as a standard preparation. Less than half a grain is rarely prescribed, and the care required in weighing it is a salutary accompaniment of the dispensing of so potent an agent. The objection is mainly in the increased liability to accident by complicating the process of dispensing. Strychnia, atropia and other powerful alkaloids should be each kept in a single receptacle—plainly marked—and when dispensed they deserve to receive the time and care needful to measure them carefully. W. P. Jr.]

5. Similar mixtures as the above can be made with morphia, opium, and tartar emetic. The proportions may be made the same, or smaller.

6. *A Concentrated Solution of Gum Arabic.*—Instead of using the powdered gum arabic wherever prescribed in liquids, it is better to use a solution of the gum in proportion 1 : 2; with this the medicine will always look nice and clean, and emulsions made with it will be elegant.

7. In a good many instances the dispensing druggists will avoid straining mixtures, by keeping solutions in the proportion of 1 : 2 of the following salts: Ammoniæ murias, magnesia sulphas, potassæ nitras, soda sulphis.

8. Very practicable are solutions of several narcotic extracts, for example: Extractum hyoscyami, extractum aconiti, extractum belladonnæ, extractum opii. As these extracts are often used in ointments, their solutions have to be concentrated 1 : 2, and as they are liable to decompose when dissolved in water alone, an addition of alcohol is necessary; glycerin is also a good solvent for them.

9. Misturæ cretæ is a preparation which only should be made extemporaneously. For this purpose, the dry mixture may be kept ready according to the Pharmacopœia, *i. e.:* ℞ Cretæ præparatæ, two parts; sacchari albi; pulvis acaciæ aa one part, mix. One drachm of this with half an ounce each of water and cinnamon water will make one ounce of chalk mixture.

10. We can not always get fresh lard, and as long as our unguentum simplex is directed to be made with white wax—an already rancid body—it happens very often that an ointment of iodide of potassium gets yellow, instead of being perfectly white. A few grains of hyposulphite of soda dissolved in a little water, added to such ointment, will turn it snow white.

11. Acetate of lead will change partly into carbonate of lead by the carbonic acid of the atmosphere or of the water; therefore solutions of it will always have a milky appearance. In all cases where it is prescribed for internal use, the precipitated carbonate of lead should be redissolved with a few drops of acetic acid, and the solution will be clear.

12. It is very important in cases of poisoning to prepare a freshly precipitated hydrated oxide of iron. This should be done in the shortest time possible; therefore the necessary ingredients have to be kept ready separately in their respective proportions, that is: Solution of tersulphate of iron, four ounces; aqua ammoniæ sufficient quantity. The precipitation is made according to the U. S. Pharmacopœia, strained, pressed firmly with the hands, and then mixed with sufficient water to make it measure six ounces. The sulphate of ammonia partly remaining in the precipitate, does not interfere with the effect of the antidote.

All these preparations should be labelled in a proper way, so that no mistake in using them may ever occur.–*The Pharmacist, Sept.*, 1868.

ADULTERATION OF MEDICINES.

By F. Mahla, PH.D.

"There is no species of fraud so universal as that which, prompted by a sordid desire after" filthy lucre, "cheats mankind out of life and health."

Such was the expression of a writer who, more than a score and a half of years ago, published "Notes on Falsifications and Adulterations," hoping thus to prevent the sale of impure drugs and medicaments.

Any one examining the present condition of the drug market will readily come to the conclusion that the attempts to falsify and adulterate have since then rather increased; for it has become almost as difficult to procure reliable medicines as it is impossible to discover the philosopher's stone. Under these circumstances, it is a duty to expose such frauds, in order to enable those who are interrested, to protect themselves against them. With this view, I propose to publish from time to time in these columns, such adulterations as have come to my notice in the Chicago drug market. I am convinced the honest druggist, who strives to offer nothing but reliable goods to the public, and the physician who naturally expects certain results from rationally prescribed medicines, will assist me in my efforts.

Epsom Salts.—There is a large quantity of a spurious article in the market, which is nothing more than finely crystallized glauber salt. It does not contain a trace of sulphate of magnesia. It may be recognized by the circumstance that it is perfectly free from bitterness to the taste, and that its aqueous solution produces no precipitate on adding first phosphate of soda and afterward aqua ammonia.

Sal Rochelle.—An article purporting to be sal rochelle is now offered for sale, which contains at least 25 per cent. of sulphate of soda. This can be discovered by adding to a somewhat dilute solution of the suspicious salt a few drops of a solution of either nitrate of baryta or chloride of barium, and afterward c. p. nitric acid. The precipitate produced by the baryta salt must disappear on the admixture of the nitric acid if the salt is pure.

Vienna Glycerin.—I had occasion to examine this really beautiful-looking article, and found it contaminated with sulphate of lime (gypsum) and chloride of sodium (salt). It contained also considerable quantities of sugar.

The presence of the sulphuric acid of the gypsum can easily be made manifest, by adding to one sample a few drops of a baryta salt solution, and afterwards diluted nitric acid; that of the lime, by admixing to another sample a solution of oxalate of ammonia. The chlorine of the salt is discovered by the appearance of a white precipitate on the addition of nitrate of silver solution.

It is a little more difficult to demonstrate the fradulent admixture of sugar. In order to do so, it is necessary to add about fifteen or twenty drops of diluted sulphuric acid to two or three drachms of the glycerin, previously diluted with its own bulk of water. This mixture is boiled over the spirit lamp for several minutes, when it is allowed to cool down. It is then mixed with a few drops of a solution of sulphate of copper, and as much caustic potassa (liquor potassa) as is necessary to redissolve the blue precipitate which at first made its appearance. The whole is then gently heated over the spirit lamp, when a copious brick-red deposit of suboxide of copper is thrown down. Pure glycerin will, under such treatment, not produce these phenomena.

Black Sulphuret of Antimony.—A quantity of powdered black sulphuret of antimony, purchased from one of our wholesale houses, was boiled with hydrochloric acid, in order to prepare the officinal "solutio antimonii terchloridi" (butter of antimony.) It was but incompletely acted on, and the solution after cooling, was filled with numerous crystals, which on examination were recognized as chloride of lead. A portion of the black residue not taken up by the hydrochloric acid was also examined; it consisted mainly of sulphuret of lead (galena.)—*The Pharmacist*, *Sept.*, 1868.

ON THE EXTRACTION OF OIL BY MEANS OF SULPHIDE OF CARBON.

BY M. HEYL.

A new and interesting process for the extraction of oil by means of sulphide of carbon is carried out on a large scale at the manufactory of M. E. O. Heyl, at Moabit, near Berlin.

With respect to this method, the annals of Prussian agriculture contain details which we now transcribe. An oil of sufficiently good quality for successful employment in the lubrication of machinery, is manufactured at Moabit at the daily rate of 2·570 kilogrammes; its residue forming an excellent food for cattle. When more or less finely ground, the latter may be sent off in sacks, and requires no pulverisation before being mixed with hard or soft water, but may be given to the animals at once, thus having an advantage over oil-cake. The oleaginous grain, such as colza, linseed, or mustard, arrives in ships by the Spree, and is raised into the wharehouse by a perpetual screw, which every day draws up into the manufactory the necessary quantity for the work (about 33 hectolitres). It is then placed by a lift upon a seive comprising a winnower, and thence falls, perfectly clean, into a triturator, the movements of whose cylinders are combined in such a way as to tear rather than bruise it.

After this preparation, the grain passes into a revolving cylinder of sheet iron, about 0·418 m. in diameter, and heated from below, whence it falls after desiccation into eight large vats, each holding 8·78 hectolitres, and capable of revolving on two horizontal axles.

After having carefully closed the vats with covers, the sulphide of carbon is conducted into them from a higher reservoir; about 7000 kilos. being required for the daily manufacture, of which, however, only 28 kilos. are lost, that is to say about ·4 per cent. From the bottom of the vat, the solution of oil in the sulphide of carbon trickles out in a thread-like manner, and becomes clearer, until at last the sulphide runs quite pure. This indicates the precise moment when the seed is completely deprived of oil, and steam is then substituted for the sulphide, of which it entirely removes all traces.

The vats are now uncovered and reversed, in order to eject the exhausted matter, which is taken up by the lifts and passed successively through three mill-hoppers heated by steam; lastly, it is again ground, when it forms an alimentary powder, containing 5·3 per cent. of nitrogen, and saleable at 15·15 francs the hundred kilos. The mixture of oil and sulphide of carbon extracted from the vat washings is purified with steam, distilled twice, and cooled in three large worms passed through refrigerators. It is then rectified, which renders it capable of employment in new operations, after being restored to the original reservoir. The trade price of sulphide of carbon is from 0·79 fr. to 0·85 fr. the kilogramme, but costs the manufactory of Moabit rather less, as it is made on the premises. The oil thus obtained is sold as lamp oil after being deprived of color; and by submitting it to a chemical process, a superior oil for purposes of lubrication is produced, possessing the advantage of being and remaining extremely fluid. Another oil is also manufactured, specially adapted to the lubrication of railway-carriage axles, inspissating at a very low temperature only. Four large wrought-iron reservoirs of 7·416 cubic metres each hold large quantities of oil, and a steam-engine of 12-horse power, with two boilers and a pressure of two atmospheres, give all the power and steam necessary for operation, transport, &c. The daily fabrication of 2·570 kilos. only requires the work of six men; and the careful analyses of MM. Birner, of Regenwalde, and Karsten, of Kiel, could only find in the residue 2 per cent. of oil and 7 per cent. of water, whilst in the residue from the common method of pressing, 9 per cent. of oil and 15 per cent. of water were discovered.

The question has been much discussed as to whether colza oil-cake be a beneficial food for cattle; it depends on the object in view. The experience of M. Strengeld, of Tharand, proves that when cattle are young and have not attained their full growth, the colza oil-cake is advantageous, as the growth of animals requires food richer in nitrogen and phosphoric acid than in fatty matter; it is also beneficial to milch cows. For fattening cattle, aliments richer in fatty matter are preferable. These remarks will explain the contradictory opinions held by different agriculturists.—*Chem. News*, August 21, 1868, from (*Preussische Annalen der Landwirthschaft.*)

NOTE ON SHERRY WINE.

When treating last year of Port, it will be remembered that we drew special attention to the prevalent custom of over-fortifying, and our observations called forth such confident denials and out-spoken resentment, that we felt constrained to give copious quotations from official reports in confirmation of the conclusions at which we had arrived. These conclusions are, we may fairly boast, now undeniable, and we are confident that what we have to say now upon sherry will be hereafter recognized as equally authoritative.

Yet, as there are plenty of captious persons abroad who know not to what our experiments tend, and are more deferential to authority of a different kind, we shall precede our own statements by those of an official sent to investigate the wines of Spain and Portugal, and to whom we have before had occasion to refer. We allude to Mr. Charles Bernard, assistant-surgeon at H. M. Customs, whose accuracy has never been impugned, and from whom we extract the following paragraphs, which contain a just estimate of the matter up to the time of our taking up the inquiry;—

"The large shippers and vineyard proprietors of Spain and Portugal are, and have been for a long period of time, manufacturers rather than simple producers of wine. The practice said to be followed in other countries, of merely watching and aiding nature in the development of fermentation, has here superadded to it a system of mixing and fortifying that tends to produce an intoxicating rather than a purely exhilarating beverage.

. . . .

"An opinion seems generally prevalent among the growers and shippers that natural wines will not maintain themselves sound unless assisted by the addition of distilled spirit. Even to some extent, where it is not the practice to add spirit to the 'must,' as in the case of the Montilla, Val-de-penas, &c., it is usual, and considered necessary, before the wines are made up for exportation, to add spirit to a greater or less amount. I am not prepared to endorse this statement fully.

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"It may be as well to give here a resumé of the general practice in the Xeres districts of preparing wines.

. . . .

"No spirit is added to the 'must' during the process of manufacture or pressing the grape at the vineyard, unless it is intended to be made 'sweet wine,' and then six arobas (equal to about twenty-one gallons of spirit, about 60 per cent. over proof) are added, in order to prevent fermentation, and to retain its sweetness; and when this sweet wine is drawn off the lees, about six months after it is made, three or four gallons more spirit are added, making in all between twenty-four and twenty-five gallons spirit to the butt. The sweet wine is not usually exported, but is used for the preparation of other wines intended for the English market, and is added to other wines to give body, flavor, and strength, in such proportion as is deemed necessary according to the style and taste required.

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"The wines intended for white dry wines, and eventually to be made up into what is known in England as 'sherry,' have about two gallons of spirit added to the butt when drawn off the lees in the month of March or April following the vintage, and during the rearing of them further small quantities, from time to time, as required. These wines selected for vino fino, Amontillado, and Manzanilla, in lieu of having spirit added to them, are thrown on to Soleras; or fine old mother wines which, by age, care, and attention, have acquired a body and character, and which are used in mixing with other wines, to improve them. The stocks of Soleras are always kept up in the following manner:—

Say 20 butts, 1841; half drawn off for use.
20 butts, 1842; half thrown into 1841.
20 butts, 1843; half thrown into 1842.

And so on from year to year, the younger wine being thrown on to the wine of the year previous.

. . . .

"Notwithstanding the quantity of spirit (two gallons) used in rearing wine (not Amontillado, vino fino, and Manzanilla) it is usual, when it is made up into sherry for England, to add at the time of using it, from two to four gallons more spirit, according to the quality and age of the wine. There is, however, no standard sherry made up, and no regulated quantity of spirit used, as that depends both on the character desired by the purchaser, and (a most important consideration) on what the wine itself requires.

. . . .

"A butt of sherry for England is made up in 40 jars in various proportions; thus, for example:—

1	Jar, spirit, about 60 over proof.
8	Jars, of the sweet wine or dulce.
7	Jars, soleras, or mother wine.
10	Jars, dry wine, 1854.
14	Jars, dry wine, 1859.
40	

. . . .

"The Amontillado is entirely a chance wine, that is, it cannot be made as a matter of course, or reckoned upon with any certainty, insomuch as out of 50 butts of wine made at the same vineyard, under the same circumstances and with the same kind of grapes, probably only two or three will turn out to be wine of this character. No reason, however, can be assigned for its partaking of the peculiar flavor, &c., of Montilla wine, from which it derives its name.

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"When the wines are classified in the spring, those which from their taste and style are likely to turn out Amontillado and vino fino are marked in a certain manner, put aside, and are carefully watched and reared, but it does not unfrequently happen that, after the selection, they fall off, and become sick and out of order, when they are treated in the same way as other ordinary white wines, and spirit is added in the proportion deemed requisite to secure them from spoiling; should the wine, however, not recover under this treatment, and acetic fermentation supervene, it is then sent for distillation into brandy.

. . . .

"The wine of Benicarlo intended for exportation is fortified to the extent of five gallons per pipe, though two and a half gallons would be considered sufficient to preserve it for home use. Here, again, but little stock is kept on hand, each year's produce being generally sold for exportation, or consumed by the time the new wine is made; and it was impossible to procure samples of natural wine of former vintages."—*From Med. Press and Circular—Dublin, Aug.* 26, 1868.

MITCHELLA REPENS, L., A DIŒCIOUS PLANT.

By Thomas Meehan.

A few weeks ago I had the honor of pointing out to the members of the Academy that *Epigæa repens* was a diœcious plant. I have now to report a like discovery in *Mitchella repens.*

In the case of *Epigæa* I had to indicate the polymorphism accompanying the divisions of the sexes, as part of the discovery; in the present instance Dr. Asa Gray is before me in noting the distinct appearances; the originality of my own observation lies merely in giving the meaning of the facts already recorded. In the last (5th) edition of Gray's Manual, speaking of *Mitchella*, the author says, "Flowers occasionally 3—6, merous, always dimorphous, all those of some individuals having exserted stamens and included stigmas,—of others included stamens and exserted style." Although this statement expresses the appearance, it is not strictly accurate; for the pistil in the one case is not perfect, and in the other the anthers are mere rudiments, without a trace of pollen in any that I have examined. The two forms are truly male and female plants.

In the female plant the pistil, with its well-developed stigma, projects one-eighth of an inch beyond the throat of the corolla. The small rudimentary anthers are sessile, and hidden among the coarse down of the corolla tube, so as not to be seen without dissection.

In the male plant it is the rudimentary pistil which is confined in the villous tube, far out of reach of pollen influence, if even it were perfectly developed. On the other hand, the anthers are borne on filaments which are free from the corolla for one-eighth of an inch, and projecting that much beyond the corolla throat.

In the case of *Epigœa* I had to correct many variations in the form and proportions of the floral parts. *Mitchella* is as remarkable for uniformity; except that the calyx teeth in the male are coarser than in the female, there is little variation from one type. Dr. Gray observes that the lobes of the corolla vary from three to four, five, and six. I may add that five-lobed corollas are common, and these are usually accompanied by five anthers.

The number of male plants is about equal to the female; occasionally plants of the separate sexes intermix. I, and probably others, have often noticed in the fall some patches bearing abundantly, other patches without a berry. The facts I now offer afford the solution.

In reference to *Mitchella*, it may not be out of place to correct an error in Lindley's "Vegetable Kingdom." The learned author includes in his natural order Cinchonaceæ *Mitchella*, *Cephalanthus*, *Diodia*, *Oldenlandia* and *Spermacoce*,—all high northern plants; and yet, when speaking of the geography of the order, writes that "the most northern species in America is *Pinckneya pubens*, inhabiting the Southern States of North America."—*Proc. Philad. Acad. Nat. Sci.*, July, 1868.

ON THE ADULTERATION OF ANNATTO.

By W. Laird, PH. C., Dundee.

The Conference meeting this year in the chief city of a great agricultural district will, I hope, be held as a sufficient reason for my bringing under notice a subject not strictly pharmaceutical, but rather agricultural, *i. e.* adulteration of annatto. I have heard that there is a saying in some parts of England, that "annatto now-a-days won't dye." I don't wonder at it, if the sample before me is anything like a fair sample of what is usually supplied to the trade. We are told "annatto is obtained from the seeds of *Bixa Orellana;* is imported into Europe in cakes and usually made up in England into rolls before sale;" we are further told that "the best annatto is known as roll annatto." This sample, when received about two years ago, was labelled "roll annatto," and seemed what its name implied, good, of a beautiful deep orange color, and pliable, something like a well beaten pill-mass. In my unsuspicious ignorance I thought it of first-rate quality. A short time after, on having occasion to sell some, I found it studded with minute crystals of salt, but, being busy, paid no attention to them, till some time afterwards I found that the crystals had largely increased in size and number. I supposed the salt had been added to help keep it moist, or it might be to increase weight and profit. I thought, however, that this was at least a safe if not a necessary adulteration. As time went on my beautiful annatto began to lose its rich color and softness, becoming shrunk, hard and mottled, like a piece of brick made of badly cleaned clay. Being now thoroughly convinced of the roguery of some one, I was desirous of knowing to what extent and how it had been adulterated. I weighed out a hundred grains from a thin section of one of the rolls, digested it for twenty-four hours in two or three ounces of spirits of wine, boiled the residue in two ounces more, then put it into a percolator, passed spirit through it till it came off colorless, finishing off with ether, which also came through colorless, thus making sure of having thoroughly exhausted it of the "orelline;" on drying and weighing the residue I found it to be about 85 grains, a pretty fair percentage. On boiling a small portion in water, cooling, and testing with iodine, it gave the blue starch reaction very strongly. Under the microscope it looks like what is sold for "lintseed meal," mixed with minute portions of an emerald green substance.

These results are not before the meeting with that exactitude I should have liked, but they are sufficient to show that roll annatto, as supplied to the trade, instead of being the best annatto, is merely a paste of farina and salt, colored with about fifteen per cent. of annatto.

It may be that the merchants are not able to sell it pure at the price charged, 1*s*. 4*d*. per lb. Let them give it pure and charge a fair price, whatever it may be; the honest dealer will not refuse it.

Mr. J. D. Smith said that the members of the Conference from a distance would do a practical service to chemists in the country if they could tell them were to get good annatto. They could hardly sell a pound of annatto now-a-days without having it returned as being adulterated. They would be glad to sell pure annatto if they could get it.

The President said that annatto was no longer grown in the British West Indies, but he thought he might say that the whole came from the French colony of Cayenne, and it certainly was grossly adulterated. He was glad to know that there was a possibility of its being grown in English colonies, as a specimen prepared in Guiana had been sent to him, and most favorably reported on by a London importer who had seen it.

Mr. Evans called attention to the fact that one sort of annatto was used for butter and another for cheese. What was usually sold was certainly "a villainous compound." He had reason to believe that attention was being given to the reintroduction of the manufacture in the British West Indies.

Professor Attfield said that no better illustration could be given of the use of their discussions than the present. A crying evil, felt by the trade throughout the country, had been now exposed, and the many thousands of reports of this discussion which would be circulated throughout Europe and the colonies would tell those who could produce a pure article that they would find a ready market in England.

—*London Pharm. Journ.*, *Sept.*, 1868.

RECTIFYING ALCOHOL BY MEANS OF GELATIN.

Whilst witnessing the manipulations of the Eburneum process in the studio of Mr. Burgess, at Norwich, Mr. Burgess mentioned a curious circumstance. When the gelatin and pigment forming the layer of eburneum is quite dry, it is coated with collodion to render it impervious to moisture. This operation he noticed always rendered the eburneum soft and limp, so that it required placing in the drying-box again. The greediness of the gelatin for moisture causes it to absorb the trace of water in the solvents of the collodion, and so become damp. This suggested to us a possible use for rectifying small quantities of alcohol, or removing water from collodion in which the use of imperfectly-rectified solvents has caused a tendency to give crapy films. Place a little pure gelatin in the spirit to be rectified. There is no danger of any portion of it dissolving, but it will absorb the water and gradually swell; it may then be removed, carrying the water with it. This will be found more convenient than the plan sometimes recommended of agitating with carbonate of potash, and after subsidence decanting.—*Chem. News, Sept.* 11, 1868, *from Photographic News.*

HARD AND UNYIELDING CEMENTS.

By M. Schwartze.

To four or five parts of clay, thoroughly dried and pulverized, add two parts of fine iron filings free from oxide, one part of peroxide of manganese, one-half of sea salt, and one-half of borax. Mingle thoroughly and render as fine as possible; then reduce to a thick paste with the necessary quantity of water, mixing thoroughly well. It must be used immediately. After application it should be exposed to warmth, gradually increasing almost to white heat. This cement is very hard, and presents complete resistance alike to red heat and boiling water.

Another Cement.—To equal parts of sifted peroxide of manganese and well pulverized zinc white, add a sufficient quantity of commercial soluble glass to form a thin paste. This mixture, when used immediately, forms a cement quite equal in hardness and resistance to that obtained by the first method.—*Chemical News, Sept.* 18, 1868, *from* (*Blätter für Gewerbe*).

EXTRACT FROM DR. HOOKER'S ADDRESS TO THE BRITISH ASSOCIATION AT NORWICH, 1868.

In this most unreliable of sciences—Fossil Botany—we do but grope in the dark; of the thousands of objects we stumble against, we here and there recognize a likeness to what we have elsewhere known, and rely on external similitude for a helping hand to its affinities; of the great majority of specimens we know nothing for certain, and of no small proportion we are utterly ignorant.

If, however, much is uncertain, all is not so, and the science has of late made sure and steady progress, and developed really grand results. Heer's labors on the miocene and pliocene floras especially are of the highest value and interest; his conclusions regarding the flower of the Bovey Tracy coal beds (for the publication of which, in a form worthy of their value and of their author's merit, we are indebted to the wise liberality of Miss Burdett Coutts) are founded on a sufficient number of absolute determinations; and his more recent *Flora Fossilis Arctica* threatens to create a revolution in Tertiary Geology. In this latter work, Prof. Heer shows, on apparently unassailable evidence, that forests of Austrian, American, and Asiatic trees flourished during miocene times in Iceland, Arctic Greenland, Spitzbergen, and the Polar American Islands, in latitudes where such trees could not now exist under any conceivable conditions or positions of land, or sea, or ice, and leaving little doubt but that an arboreous vegetation once extended to the Pole itself. Discoveries such as these appear at first actually to retard the progress of science, by confounding all previous geological reasoning as to the climate and condition of the globe during the tertiary epoch.

I have said that the greatest botanical discoveries made during the last ten years have been physiological, and I here alluded especially to the series of papers on the "Fertilization of Plants," which we owe to Mr. Darwin. You are aware that this distinguished naturalist, after accumulating stores of facts in Geology and Zoology during his circumnavigation of the globe with Captain Fitzroy, espoused the doctrine of the continuous evolution of life, and by applying to it the principles of natural selection, evolved his theory of the origin of species. Instead of publishing these views as soon as conceived, he devoted twenty more years to further observation, study, and experiment, with the view of maturing or subverting them. Amongst the subjects requiring elucidation or verification were many that appertained to Botany, but which had been overlooked or misunderstood by botanical writers, and these he set himself to examine vigorously.

The first fruits of his labors was his volume on the "Fertilization of Orchids," undertaken to show that the same plant is never continuously fertilized by its own pollen, and that there are special provisions to favor the crossing of individuals. As his study of the British species advanced, he became so interested in the number, variety, and complexity of the contrivances he met with, that he extended his survey to the whole family, and the result is a work of which it is not too much to say that it has thrown more light upon the structure and functions of the floral organs of this immense and anomalous family of plants than had been shed by the labors of all previous botanical writers. It has, further, opened up entirely new fields of research, and discovered new and important principles that apply to the whole vegetable kingdom.

This was followed by his paper on the two well-known forms of the primrose and cowslip,* popularly known as the pin-eyed and the thrum-eyed; these forms he showed to be sexual and complementary; their diverse functions being to secure, by their mutual action, full fertilization, which he proved could only take place through insect agency. In this paper he established the existence of homomorphic, or legitimate and heteromorphic, or illegitimate unions amongst plants, and details some curious observations in the structure of the pollen. The results of this, perhaps more than any other of Mr. Darwin's papers, took botanists by surprise; the plants being so familiar, their two forms of flower so well known to every intelligent observer, and his explanation so simple. In myself I felt that my botanical knowledge of these homely plants had been but little deeper than Peter Bell's, to whom

A primrose by the river's brim
A yellow primrose was to him,
And,—it was nothing more.

Analogous observations on the dimorphism of flax-flowers and their allies,† formed the subsequent paper, during which he made the wonderful discovery that the common flax, the pollen of one form of flower, is absolutely impotent when applied to its own stigma, but invariably potent when applied to the stigma of the other form of flower; and yet both pollens and stigmas of the two kinds are utterly undistinguishable under the highest powers of the microscope.

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* Journal of the Linnean Society, vol. vi, p. 77.

† Journal of the Linnean Society, vol. vii, p. 69.

His third investigation is a very long and laborious one on the common loose-strife,* (Lythrum salicaria), which he showed to be trimorphic, this one species having three kinds of flowers, all annually abundantly produced, and as different as if they belonged to different species; each flower has, further, three kinds of stamens, differing in form and function. We have in this plant, then, six kinds of pollen, of which five at least are essential to complete fertility, and three distinct forms of style. To prove these various differences, and that the co-adaptation of all these stamens and pistils was essential to complete fertility, Mr. Darwin had to institute eighteen sets of observations, each consisting of twelve experiments, 216 in all. Of the labor, care and delicacy required to guard such experiments against the possibility of error, those alone can tell who know experimentally how difficult it is to hybridize a large flowered plant of simple form and structure. The results in this case, and in those of a number of allied plants experimented on at the same time, is what the author's sagacity predicted; the *rationale* of the whole was demonstrated, and he finally showed, not only how nature might operate in bringing these complicated modifications into harmonious operation, but how through insect agency she does do this, and why she does it too.

It is impossible even to enumerate here the many important generalizations that have flowed from these and other papers of Mr. Darwin's on the fertilization of plants; some that appear to be common-place at first are really the most subtle, and, like many other apparent common-places, are what, somehow, never occur to common-place minds: as, for instance, that all plants with conspicuously colored flowers, or powerful odors, or honeyed secretions, are fertilized by insects; all with inconspicuous flowers, and especially such as have pendulous anthers, or incoherent pollen, are fertilized by the wind; from whence he infers that, before honey-feeding insects existed, the vegetation of our globe could not have been ornamented with bright-colored flowers, but consisted of such plants as pines, oaks, grasses, nettles, &c.

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* Linnean Transactions., vol. viii, p. 169.

The only other botanical paper of Mr. Darwin's to which I can especially allude, is that "On the Habits and Movements of Climbing Plants,"* which is a most elaborate investigation into the structure, modification, and functions of the various organs by which plants climb, twine, and attract themselves to foreign objects. In this he reviews every family in the vegetable kingdom, and every organ used by any plant for the above purpose. The result places the whole subject in a totally new light before us. The guesses, crude observations, and abortive experiments that had disfigured the writings of previous observers are swept away; organs, structures, and functions of which botanists had no previous knowledge are revealed to them, and the whole investigation is made as clear as it is interesting and instructive.

The value of these discoveries, which add whole chapters to the principles of Botany, is not theoretical only; already the horticulturalist and agriculturalist have begun to ponder over them, and to recognize in the failure of certain crops the operation of laws that Mr. Darwin first laid down. What Faraday's discoveries are to telegraphy Mr. Darwin's will assuredly prove to rural economy, in its widest sense and most extended application.

Another instance of successful experiment in Physiological Botany is Mr. Herbert Spencer's observations on the circulation of the sap and formation of wood in plants.† As is well known, the tissues of our herbs, shrubs, and trees, from the tips of their roots to those of their petals and pistils, are permeated by tubular vessels. The functions of these have been hotly disputed, some physiologists affirming that they convey air, others fluids, others gases, and still others assigning to them far-fetched uses of a wholly different nature. By a series of admirably contrived and conducted experiments, Mr. Spencer has not only shown that these vessels are charged at certain seasons of the year with fluid, but that they are intimately connected with the formation of wood. He further investigates the nature of the special tissues concerned in this operation, and shows not merely how they may act, but to a great extent how they do act. As this paper will, I believe, be specially alluded to by the President of the Biological Section, I need dwell no further on it here than to quote it as an example of what may be done by an acute observer and experimentalist, versed in physics and chemistry, but above all thoroughly instructed in scientific methods.—*Lond. Chem. News*, Aug. 21, 1868.

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* "Linnean Transactions," vol. ix, p. 1.

† Ibid., vol. xxv, p. 405.

NOTE ON A BLACKISH-GREEN INSECT-WAX.

By R. Reynolds, F.C.S.

Attention has been called to a variety of black wax by the paper lately published by Dr. Smith.* Unfortunately no history of Dr. Smith's specimen can be given, and it may fairly be doubted whether it is an animal or a vegetable product. In the instance which I now bring before the Conference there is sufficiently clear evidence of the source of the wax. I received the specimen directly from the discoverer, who tells me that he brought it from one of the group of islands in the Pacific Ocean, known as the Line Islands. The natives of these islands are a highly savage race, and but little intercourse with Europeans takes place. There are two specimens, the first being a mass weighing several ounces, just as taken from the stump of a tree. The insect producing the wax is said by my informant to be about the size of a small house-fly. There is little trace of structure to be detected, heat seeming to have destroyed this. The color may be described as being a blackish-green; the odor is well-marked, resembling anise; in consistence it is softer than English bees'-wax, and more tenacious. The second specimen was clarified before it was brought to this country, having been melted with water and strained; the removal of some sand has been the chief result. As the first specimen has only been in my hands for a week, I am unable to speak definitely as to its chemistry. However, a few experiments upon the proportion taken up by various solvents, as alcohol, ether, etc., suffice to show that it is quite distinct from the product of *Apis mellifica*. I hope to give the results of a chemical investigation to a future meeting of the Conference.—*Lond. Pharm. Journ.*, *Oct.*, 1868.

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*Pharm. Journ. July, 1868.

COMMERCIAL ACONITINE.

To the Editor of the Pharmaceutical Journal.

Sir,—We beg to hand you a translation of a paper on aconitine, received from Mr. Merck, of Darmstadt. It refers to a sample which we had sent to Mr. Merck, and which we had received from a first-class house here. The extraordinarily low price at which this preparation is being sold lately in London induced us to have it examined, and we doubt not that the result will prove of interest to your readers.

We remain, Sir, your most obedient servants,

Roller & Widenmann.

3, *Love Lane*, *Eastcheap*, *London*, *Sept.* 7, 1868.

The sample of aconitine received from London differs as against my preparation, *id est* the officinal aconitine, in the following points:—The pure officinal aconitine is readily soluble in ether, alcohol, and chloroform, and from these solutions it is obtainable only in an amorphous resinous mass, but by no means in crystalline form. In boiling water it becomes soft, and can be kneaded. Its reaction is decidedly alkaline.

The English aconitine, on the other hand, is but *slightly soluble in ether*, and also much less soluble in alcohol than the pure aconitine; from its solution in boiling alcohol it crystallizes readily on cooling. It is also difficultly soluble in chloroform, and in boiling water it does not become soft, but remains in a pulverulent condition. Its reaction is less alkaline.

If the aconitine in question be prepared from aconite root (which there is no cause to doubt), it is probably identical with aconelline or napelline, since both these bodies are found in the aconite root, and they are very similar in properties to the sample in question. On no account, however, can the latter be accepted as pure aconitine.

According to experiments made at Paris with the various aconitines of commerce, the crystalline body is far less active then the amorphous aconitine.—*Pharm. Journ.*, Oct., 1868.

List of the Contributors to the Building Fund for the New Hall of the Philadelphia College of Pharmacy. (*Continued from Page* 466.)

Henry A. Bower,	$ 25 00
T. J. Brown,	5 00
Cash,	5 00
H. A. Vogelbach,	10 00
Caleb H. Needles,	50 00
A. M. Wilson,	5 00
Henry Thayer & Co., N.Y.,	125 00
Frederick Brown,	200 00
Robert Shoemaker,	200 00
Bullock & Crenshaw,	200 00
Charles Shivers,	50 00
J. L. Bispham,	25 00
J. S. Everton,	10 00
Wm. Macpherson,	10 00
A. H. Duval,	$5 00
Jos. J. Dugan,	5 00
Wm. H. Hickman,	5 00
J. M. Thomas,	5 00
Ambrose Smith,	25 00
Geo. W. Stoeckel, Pittsburg,	10 00
J. T. Hufnal,	10 00
S. J. Jones,	25 00
Since Sept. 1,	$1010 00
Previously,	5271 50
Total contributions,	$6281 50

Minutes of the Philadelphia College of Pharmacy.

The Semi-Annual Meeting of the Philadelphia College of Pharmacy was held at the College Hall, No. 145 north 10th street, on Monday evening, September 28, 1868. Twenty-three members present. In the absence of the President, the first Vice-President, Dillwyn Parrish, presided.

The minutes of the Annual Meeting were read and approved.

The minutes of the Board of Trustees were read by the Secretary of the College.

The Committee appointed to make arrangements for the session of the American Pharmaceutical Association, made the following report, which was accepted:

"The Committee appointed by this College at the Annual Meeting in March last, to make arrangements for the 16th session of the American Pharmaceutical Association, which convened in this city on the 8th day of the present month,

Respectfully report,—That notwithstanding the obstacles to the progress of the College building, occasioned by the continued wet weather after breaking the ground and the excessive heat of midsummer, the contractor pushed forward the building with commendable zeal, and your Committee were enabled to carry into effect the resolution of the College, offering the new building for the sessions of the Association.

One of the prominent features of the arrangements made by the Committee was an exhibition of chemical and pharmaceutical products, together with apparatus and implements of new or improved device. The exhibition was very successful, and reflected great credit on all the depositors, evidencing in a pleasing manner that our city still main[illegible] t[illegible] prestige for skilled labor in the manufacturing arts.

Your Committee made arrangements for the entertainment of the members of the Association during the intervals of the sessions—and herewith present a printed programme of the same—all of which they believe was acceptable to the members of the Association.

A Guide Book of the City of Philadelphia was compiled by Prof. Parrish, and neatly printed, covering 64 pages; a copy of the book was presented to each stranger present at the meeting.

At the *conversazione* held in the College Hall on the evening of the eighth, the Committee thought proper to present publicly to the Chairman of the Building Committee, Thomas S. Wiegand, a testimonial evidencing the appreciation of the members of the College of his zeal and indefatigable exertions in having the building sufficiently advanced for the meeting of the Association. The presentation was made in behalf of the members of the College by our first Vice-President, Dillwyn Parrish.

Your Committee added to their number their fellow member Wm. C. Bakes, and to his happy conception, well schooled taste in arrangement, and untiring energy they attribute the major part of the success which has attended the arrangements. The amount of actual labor performed by Mr. Bakes is perhaps only appreciated by your Committee, and they can not refrain from expressing their sense of services so cheerfully given.

In conclusion, your Committee return thanks to all the contributors to the fund, which has enabled them to meet the expenses attending the reception and entertainment of their guests.

A. B. Taylor,
James T. Shinn,
Chas. Bullock,
Edward Parrish,
William Procter, Jr.,
Committee."

Prof. Robert Bridges, M. D., on behalf of the delegates to the American Pharmaceutical Association, made a verbal report.

Dillwyn Parrish, Chairman of the Committee on Ways and Means, reported the condition of the building fund as follows:

Cash received from sale of Premises on Filbert St.	$15.000 00
" " " collections for the fund,	5.496 50
" interest,	69 96
	$20.566 46
Cash paid on orders from Chairman of Building Committee,	18.103 00
Balance subject to order,	$2.463 46

T. S. Wiegand, Chairman of the Building Committee, reported on the progress of the building. After the contract had been signed, the city Surveyor required an increased thickness of the walls of the first story, and as the building progressed, several additional items of expense, not included in the contract, were incurred from causes expedient or necessary. These, together with the cost of furnace for warming the building, and gas fixtures, it was thought would require from $8000 to $10,000 more money than has been collected. Of this amount, about $1500 subscribed was yet uncollected. The members of the College were exhorted by the Chair to renewed exertion in collecting funds promptly to enable the Building Committee to complete their task without the legacy of a debt upon the College.

The recommendation from the Board of Trustees for the transfer of certain funds of the College by the Treasurer, was concurred in.

John Bley having been recommended by the Board of Trustees for resident membership, an election was ordered; Ambrose Smith and Daniel S. Jones, acting as tellers, reported his unanimous election.

The semi-annual election being ordered, the tellers reported the election for Trustees of Wilson H. Pile, M.D., Edward Parrish, Alfred B. Taylor, Evan T. Ellis, William C. Bakes, William J. Jenks, Henry N. Rittenhouse, Charles Shivers.

Committee on Deceased Members.—Edward Parrish, William Procter, Jr., Charles Bullock.

CHARLES BULLOCK, *Secretary.*

Editorial Department.

THE SIXTEENTH ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION commenced and concluded its seven sittings during the second week of September last, in accordance with the announcement in our last number, and at the place then specified. At the last moment it was determined, wisely, not to plaster the large lecture room before the meeting, as it would have been impossible to have made it sufficiently dry to be safe to health. Abundant seats were provided, and sufficient table room to accommodate the officers and reporters.

We give a pretty full report of the minutes, having, as usual, had permission from the Secretary to avail ourselves of his rough notes, and the reports of committees. The meeting was well attended, about 130 having recorded their names, and a number omitted this duty. The list of new members admitted at this meeting was 75, so that the roll at present is about 800 members.

Of the reports, that on the Progress of Pharmacy, by Mr. Diehl, and that on the Drug Market, by Mr. Robbins, were particularly noticeable. The statistical tables of the latter report have been prepared with great care, and when the Proceedings are published it will be seen just what relation drugs sustain in the tariff for revenue, and what a disproportionate tax they bear compared with most other commodities.

The report of Prof. Maisch on the Legal Aspects of Pharmacy will exhibit the present condition of laws bearing on our profession, and show how much unity of action among the several State Legislatures is needed to effect reform.

The Association (at page 498) expresses its views on the mooted subject of the renewal of physicians' prescriptions, and, we think, wisely. The number of queries answered was about as usual, 18 in all, whilst 8 original volunteer papers were read or presented. Some of these possess t interest, and we hope in future numbers to avail ourselves of them when the Proceedings are printed.

A new feature of the meeting of last year was the Exhibition. The Committee of Arrangements appointed by our College early determined to follow that example, and, availing themselves of their powers, they were so fortunate as to secure the eminently valuable services of their fellow-member, William C. Bakes, by adding his name to the Committee. To the untiring energy, enthusiasm, and perseverance of Mr. Bakes, more than to any other cause, is due the very creditable and extensive display of chemicals, pharmaceuticals, and objects of interest, including apparatus, and living perennial plants illustrative of the materia medica, which the rooms presented. The latter were chiefly from the conservatories of Prof. George B. Wood and Mr. Joshua Longstreth, who kindly aided the efforts in this way. We hope to be able to say something about the articles exhibited.

On the evening of Tuesday, the 8th of September, the visiting members and their ladies were invited to meet the members of the College and their friends at the Exhibition Hall, which afforded ample room for the great purpose of the invitation,—viz., the social intercourse of the members of the Association. The display of the Exhibition afforded abundant subjects for conversation, and all went on pleasantly in the Hall till, about 9½ o'clock, the caterer of the Committee gave due notice that the company were needed to perform certain practical operations in the adjoining library room, where a table filled with the varied products of the gardeners', the bakers', and the confectioners' arts, was set for their use and enjoyment. All passed off pleasantly, and an excellent opportunity was afforded to mingle in a social way, introductory to the graver duties of the coming session. During the evening the occasion was taken by the members of the Committee of Ways and Means having in charge the general subject of the erection of the College Hall, to present a testimonial to Thomas S. Wiegand, for his indefatigable, intelligent and valuable labors in the performance of his duties as Chairman of the Building Committee. The testimonial, which consisted of a very beautiful ice pitcher and two goblets on a waiter, all of plate, was presented by Dillwyn Parrish, Chairman of the former committee, in a neatly turned speech, which was replied to by Mr. Wiegand.

On Friday, after the final adjournment of the meeting, the members were invited by the druggists and pharmaceutists of Philadelphia to an excursion on the Delaware in the steamer Twilight, embarking at 3½ P.M. The company, about 350 in number, consisted of the visiting members and their ladies, with the pharmaceutists and druggists of Philadelphia and their ladies. The steamer passed down the river to League Island, when an opportunity was afforded to view the fleet of iron clads anchored there, after which, entering the Schuylkill river, the boat passed up its winding course until opposite the once famous Bartram's Botanic Garden, the former residence of "the King's Botanist," during a large portion of the 18th century, and so well described in Bartram's Letters, published by Dr. Darlington. In sight of Gray's Ferry the steamer turned, and, retracing its course, passed the city front and proceeded up the Delaware about twenty miles to Bristol, when, without landing, the party returned to Philadelphia, having sailed about sixty miles. At intervals, a band of musicians added their influence in entertaining the company with sweet sounds. A substantial collation was provided, and served in the lower saloon. The disposition to commingle and enjoy socially the excursion was a pleasant feature of the occasion. and all passed off to general satisfaction. Towards the close of the trip a meeting was called, and some speeches were made, during which testimony was borne to the excellent management of Messrs. William C. Bakes, Alfred B. Taylor, and James T. Shinn, of the Committee of Arrangements, in connection with the entertainment of the guests of the College of Pharmacy.

EXHIBITION AT THE MEETING OF THE ASSOCIATION.—The Committee having in charge the arrangements for the exhibition, of which William C. Bakes was Chairman, decided to hold it in the main hall of the first story, and the adjacent room, to be used for the practical laboratory. The unfinished condition of the room rendered some decoration with bunting necessary, which, with the numerous pictures and other objects suitable for display on the walls, gave a finish to the *toute ensemble* quite creditable to the good taste of the management.

A suite of tables for the sides, and a main table for the centre of the room, amply accommodated the articles on exhibition, with space for the visitors to pass between. The display of fine chemicals and pharmaceutical preparations was very creditable, and articles in glass ware for pharmaceutical use abundant and excellent, including shop furniture, bottles., etc., and mineral water apparatus, both for draught and for generating and condensing the gas, etc. Our space is too small for even a full enumeration of the depositors, much less of the articles, but we give the most we can afford, presuming that Dr. Hoffman's report to the Association will enter more critically into the merits of the exhibition.

Powers & Weightman—Exhibited about 60 samples of Chemicals, among which were several alkaloids and organic salts of great beauty and large volume. One sample of Sulphate of Morphia was valued at $1500. There were also fine specimens of Codeia, Red and Calisaya Barks, Chloroform, and volatile oils.

Rosengarten & Sons.—An assortment of fine Chemicals, in their usual good style and quality.

Hance, Griffith & Co.—Exhibited Pharmaceutical Preparations, Fluid Extracts. Sugar-coated Pills, &c. Also a patent Percolator, originated by Mr. Hance.

Bullock & Crenshaw.—An extensive display of Sugar-coated Pills, and other preparations.

Kurlbaum & Son.—A display of Chemicals, among which were fine specimens of Calomel in crystals.

Arthur Burnham & Co.—Exhibited Tin Ware and Gas Furnaces, for druggists' use.

Charles Ellis, Son & Co.—Had a fine collection of pharmaceutical preparations, including a great variety of Fluid Extracts, Sugar-coated Pills, &c.

Thomas & Twining.—A large assortment of Fluid Extracts, Solid Extracts, &c.

New England Glass Co.—Made a handsome display of Druggists' Glassware.

Dr. Edward R. Squibb.—Two cases of Rhubarb, of fine quality.

R. H. Watson—Exhibited a choice collection of Sponges of all grades, also fine Essential Oils, Vanilla Beans, Musk, &c.

Prof. J. M. Maisch.—Samples of Fruit Essences.

J. C. Baker & Co.—Cod-liver Oil, and Solution of Citrrate of Magnesia.

Nolen & Sweeney.—Cod-liver Oil.

L. Martin & Co.—Made a fine display of Chemicals.

Henry Bower—Exhibited his pure Glycerin, and some massive crystals of Prussiate of Potassa; also an ornamental design, of the same material.

Mellor & Rittenhouse.—Pharmaceutical Preparations, such as Fluid Extracts, Syrups, Extracts, Plasters, &c. Also a Pulvometer, for measuring the quantity of the salt and acid in Seidlitz Powders, invented by Mr. Rittenhouse. This firm also exhibited an apparatus for filling bottles,—a very convenient arrangement.

Edward Parrish—Exhibited Chemical Food, Glycerole Hypophosphites, also various pharmaceutical preparations made by P. Squire, of London, and a variety of pharmaceutical apparatus,—stills, gas furnaces, suppository trays, &c.

H. Thayer & Co., N. Y.—A collection of Sugar-coated Pills.

Howell & Onderdonk, N. Y.—Ferrated Elixirs, Cordials, &c.

H. A. Tilge & Bro.—A case of Toilet requisites.

I. H. Raser, of Pottsville.—A collection of Botanical Drawings in water colors, very well executed.

R. & G. A. Wright.—Alconated Glycerin Soap.

Van Haagen, McKeone & Co.—Made a large display of Fancy and Plain Toilet Soaps.

Savery & *Co.*—A general assortment of Iron Mortars, all sizes; also Evaporating Pans, Steam Evaporators, and other arrangements for the Pharmaceutical Laboratory.

H. Trœmner—Exhibited fine Prescription Scales, and beautiful styles of Hoffman's Balances.

J. B. Moore—Made an exhibition of Suppositories, containing various medicinal ingredients.

W. F. Fry & Co., N. Y.—Self-cupping Glasses, a new Breast Pump, and papier mache covered Pocket Flasks.

Tourtelot Bros., Chicago.—Samples of their Condensed Beef and Beef Biscuit.

Wyeth & Bro.—Exhibited, for the manufacturers, an ingenious arrangement for making Suppositories without the aid of heat; also copies of Dr. Hartshorne's Guide to the Medicine Chest, published by them.

Snowden & Bro.—A case of fine Surgical Instruments.

Jas. T. Shinn.—Liquid Rennet and Opal Dentallina.

Moss & Bruckner.—A case of rare chemical products, and glass Liebig's Condensers for small operations.

W. R. Warner & Co.—A display of Sugar-coated Pills, in great variety.

W. Hodgson.—Inks of various kinds.

Thigeod & Son.—Saddle Bags and Medicine Chests.

Gilbert (*8th and Sansom*).—A fine display of Family Medicine Chests, in Mahogany and Leather.

Chas. Shivers.—Belladonna, Opium and Aconite Plasters, spread like Adhesive Plasters; also Isinglass and Court Plaster.

John Matthews, N. Y.—An elegant Soda Water Castor, combining many improvements over those in general use. The Syrup Cans are of glass, and so conveniently arranged that the syrup cannot drop over the counter. The opening is so arranged that only enough syrup for a single glass can pass through at one time. The cooling surface is also ingeniously constructed. He also exhibited a very complete Apparatus for making Soda Water, a Glass-lined Fountain, and his patent Soda Water Bottles, which supersede the use of corks.

T. Morris Perot & Co.—Had on exhibition a Soda Water Draught Apparatus and Generator, made by Morse, of Boston.

Whitall, Tatum & Co.—Exhibited an assortment of Green and German Flint Glassware.

Geo. W. Stoeckel, Pittsburg.—Graduated Vials and Bottles, of all sizes.

B. H. Sleeper & Co.—A section of Shelving, with Drawers; also Bottles with various forms of Glass labels, and a line of Druggists' Sundries.

W. H. Pile.—Hydrometers, Urinometers, &c.

A. H. Lawrence & Co.—Excelsior Spring Water.

Hindermayer.—Soda Water Draught Apparatus and Generator.

Thos. Perrins—Exhibited Aquariums in various forms.

THE NEW COLLEGE HALL. THE BUILDING COMMITTEE. THE FUNDS.—We have chronicled the progress of the College building with the greater interest, as for the time during which it was in course of erection our Institution was without a local habitation, and our ability to accommodate the National Association, and the coming courses of instruction depended on its partial and final completion. At this writing the plaster-finished. On the 7th of October Prof. Parrish inaugurated the hall by a ing is finished, and the lower Hall and the two larger lecture rooms are nearly general introductory to the lectures in the upper room, at which several hundred persons were present. The address was a historical account of the College, and will be published. By the first of December it is to be hoped the building will be handed over to the College by the Committee and Contractor, so that our Standing Committees on the Museum and Library may have the opportunity to restore these important influences to their new positions in the lower hall, where the members can again get at them. It is not our purpose now to give a description of the building and its interior accommodations, which we hope to do in our next issue, but mainly to call the attention of the Pharmaceutists and Druggists of Philadelphia to the fact that the Institution which has so long and faithfully represented them, has a new and commodious Hall, capable of accommodating a large number of students in its School of Pharmacy, and of affording an excellent and central meeting room and accommodations for its members. Every pharmaceutist who has any ambition in, and for, his profession should be a member of this institution, as well to join hands in the advancement of our fraternity as a body, as to derive personal advantages from association with fellow members. In union there is strength, in unity of action a vast multiplication of force. What has been a tedious and laborious undertaking for a few individuals would become an easy and influential work for the united body of the Pharmaceutists of Philadelphia. The opportunity is now offered to join in and aid the College in getting its Hall completed. The Building Committee need several thousands of dollars to finish the building and furnish it, and they appeal to all who are directly interested in Pharmacy, as well as to all others who may desire to advance the efforts of a useful and valuable institution, to contribute what they can to the building fund of the College Committee, of which Dillwyn Parrish, 1017 Cherry Street, is the Treasurer. The funds already raised have been contributed by one-third of the Pharmaceutists of this city, the other two-thirds having as yet given nothing. We earnestly hope that all who are able will give, whether it be little or much, and aid in the completion and furnishing of the Hall.

The British Pharmaceutical Conference.—This body met in August, and its proceedings have been published in the September and October numbers of the Pharmaceutical Journal, both of which have been received. The address of President Hanbury appears to have given universal satisfaction. It commences with a general view of other associations of like character, and more especially of that in the United States, noticing the proceedings of 1867. It then reviews the developments that have occurred in England since the previous meeting, alluding to the labors of Guy, Waddington, Stoddart, Dean and Brady, Attfield, Harley and Umney. A well deserved tribute of praise is given to Dr. Flückiger, of Bern, for his contributions to science, and the remainder of the address is devoted to the efforts made and now making in the culture of cinchona, columbo, ipecacuanha and jalap. In regard to the two latter, Mr. Hanbury says, in regard to their British colonial culture, "of these the most important seems to me to be ipecacuanha, plants of which are now growing at Calcutta and Madras, as well as in the West India Islands of Trinidad, but in none of these localities does the plant prosper vigorously. In fact, the experiment looks as little hopeful as the cinchona enterprise did when the first bark trees were sent to India by Dr. Royle; and until we get a supply of good seed from Brazil I do not anticipate that it will be possible to make a fair trial of propagating the ipecacuanha plant in India or elsewhere."

"The experiments made in cultivating the jalap plant (*Exogonium purga*, Benth.), are much more hopeful, and I have the gratification of presenting to your notice the first specimen of that drug produced in India. It was grown at Ootacamund, where live roots, carried from England by my friend Mr. Broughton, were planted in January, 1867. These roots grew with surprising luxuriance, each producing a fine cluster of tubers. Some of them were dug up in December of the same year, when the largest tuber was found to weigh over a pound and a half. This jalap of India, you will observe, differs very notably in appearance from what we get from Mexico, owing chiefly to a different mode of drying; in fact to facilitate this operation the tubers have been sliced. It compares, however, favorably with that of Mexico as regards percentage of resin, and from a few trials made in India we may judge that its medicinal powers are fully maintained."

The general results of the conference appear to have been quite successful. A number of excellent papers were produced, several of which have transferred to this number. A new feature is the contribution of papers from foreign sources, two such appearing in the proceedings from Dr. Flückiger, of Switzerland, one of which, on opium, may be seen at page 524. The membership of the Conference now numbers over 550, the meeting forms a common ground on which all classes of pharmaceutists may meet, and its harmonizing influence is even now being realized. At the third sitting, a proposition for the election of foreign members was decided on affirmatively, it having previously been understood that the number should be limited to twenty. For the present, seven only were proposed, viz., Prof. P. W. Bedford, of New York, Mr. Augustus Ambroise Delondre, of Sèvres, France, Mr. Albert E. Ebert, of Chicago, Dr. J. B. Edwards, Ph.D. and F.C.S., of Montreal, Canada, Dr. F. A. Flückiger, of Bern, Switzerland, Prof. Edward Parrish, of Philadelphia, and William Procter, Jr., of Philadelphia, and after a ballot was taken the President announced their due election.

At the fourth sitting it was decided to hold the next meeting at Exeter. The following officers were elected for the year 1868–9:

D. Hanbury, of London, *President;* H. Deane and Prof. Bentley, of London, *Vice-Presidents as Ex-Presidents;* W. W. Stoddart, of Bristol, J. Ince, London, G. Cooper, Exeter, H. S. Evans, London, *Vice-Presidents;* H. B. Brady, New Castle, *Treasurer;* Prof. Attfield, London, R. Reynolds Leeds, *General Secretaries;* Matthew Husband, Exeter, *Local Secretary.*

There was also an exhibition held in connection with the meeting which embraced many interesting specimens in materia medica, chemicals and apparatus.

MASSACHUSETTS COLLEGE OF PHARMACY.—From the *Boston Advertiser* of October 9th, we learn that

"The regular monthly meeting of the trustees of this institution was held on Wednesday afternoon at the rooms of the college, 12 Temple place, Mr. S. M. Colcord, chairman, presiding. After the reading of the minutes of the last meeting, Mr. J. H. Hubbard of Cambridge was elected a member of the college.

Mr. H. W. Lincoln, in behalf of the delegates to the late meeting of the American Pharmaceutical Association held in Philadelphia, read a very interesting report of that meeting.

Mr. G. F. H. Markoe reported for the lecture committee that the school of pharmacy would begin its second session, 1868–69, on Friday evening the 16th inst., and that the laboratory of Mr. James F. Babcock, 8 Boylston street, had been secured for the lectures, and ample accommodations obtained for the class in analytical chemistry. Mr. Markoe called attention to the necessity of providing a diploma for the graduates of the college. The following gentlemen, nominated by the chairman, were appointed a committee to procure a diploma and arrange all matters relating to the graduating ceremonies: Thomas Hollis, H. W. Lincoln, Ashel Boyden, J. S. Melvin, G. F. H. Markoe.

On motion of Mr. Lincoln the meeting then proceeded to ballot for the Faculty of the School of Pharmacy. The following gentlemen were elected:—

Professor of General and Analytical Chemistry, E. L. Stoddard, Ph.D.

Professor of Materia Medica and Botany, Cyrus M. Tracy.

Professor of the Theory and Practice of Pharmacy, George F. H. Markoe.

There being no further business the meeting adjourned."

Our Boston friends are evidently in good earnest and are on the right track. They will have tuition this winter in qualitative analysis for advanced students, and eventually will build up their school on a permanent and solid foundation. They expect to grant diplomas, but only such students as may have served their time in *dispensing stores* will be entitled to the degree of Graduate in Pharmacy. Clerks from wholesale druggists will receive a certificate of proficiency, and *will not be examined* in extemporaneous pharmacy." They give "the reason for this distinction is that the art of dispensing medicine can only be properly learned by long practice at the dispensing counter; Lectures, be they never so good, are only valuable aids to practical instruction." We wish them success, and heartily approve of their mode of beginning.

The Pharmacist.—Chicago, Sept., 1868, Vol. 1, No. 1; pp. 20, quarterly. Published by the Chicago College of Pharmacy. E. H. Sargent, editor.

The first number of this new journal, announced in our last, has been received, and in all respects has come up to our anticipations. It consists almost wholly of original papers, of the character of which our readers may judge, as we have transferred several of them to this number. The tone of the editorial is excellent, and we hail its publication as a useful addition to the periodical literature of American Pharmacy. Though commencing as a quarterly, the Editor promises soon to make its issue monthly and increase its number of pages, which, however, are very large, being royal octavo size. It is well printed on good paper, with a quadruple cover of advertisements.

The Canadian Pharmaceutical Journal.—Toronto, Ontario, August, 1868, vol. 1, No. 4 and 5 ; pp. 16, quarto. Published monthly.

We have not seen the first three numbers of this journal. It appears to be issued under the auspices of a committee of the Canadian Pharmaceutical Society. Advertising is a prominent object of the journal, and the first and last pages have two-thirds of their space devoted to advertisements, the articles are generally brief and practical. We learn from page 54 that the regular meetings of the Society occur monthly, when, after the transaction of business, a paper is read. The society numbers at present 200 members, who consist of principals, assistants and apprentices. The former class paying $4 per annum, and the two latter $2, as the annual fee. The Journal is one of the perquisites of members, and is well printed. The annual subscription is a dollar.

The Physician and Pharmaceutist.—New York, August, 1868 ; vol. 1, No. 1 ; pp. 16, quarto. August, 1868, quarterly. Published by Reed, Carnick & Andrus, Manufacturing Chemists and Pharmaceutists, New York.

The success of the *Druggists Circular* and some other publications which make advertising a prominent feature, seems to have induced various other parties to enter on the same line, an instance of which is the paper above noted. The parties issuing it promise to make their journal full of interest.

Half Yearly Compendium of Medical Science. Part I. January, 1868. Edited by S. W. Butler, M. D., and D. G. Brinton, M. D

The reception of this number is acknowledged ; the work was noticed in the last issue in alluding to the second number. Price $3 per annnm.

The Druggists' General Receipt Book; comprising a copious veterinary formulary ; numerous receipts in patent and proprietary medicines, druggists' nostrums, perfumery and cosmetics ; beverages, diabetic articles and condiments ; trade chemicals, scientific processes and an appendix of useful tables. By Henry Beasley. Sixth American, from the last London edition. Philadelphia, Lindsay & Blakiston. 1868 ; pp. 495, octavo.

From the publishers.

ERRATUM.—At pages 491 and 508, for *William H.* Fuller, Local Secretary, read HENRY W. FULLER. Our readers will please make the correction.

OBITUARY.

Christian F. Schönbein, whose death at Baden-Baden, on September 4th, was announced in yesterday's Ledger, was born in Wurtemburg on October 18, 1799. At an early age he devoted himself to scientific pursuits, but being limited in his means, was obliged to teach, in order to complete his education. In 1828, he was appointed professor in the University of Basle, in Switzerland, and became famous in a few years for the boldness and originality of his generalizations; although inferior to several cotemporaries, as an experimenter, it is stated that he has, perhaps, never had a superior as a theorist.

In 1839 Schönbein made his great discovery of ozone, the form of which oxygen assumes under severe electric discharges, and which gives to the air the peculiar odor which prevails after a stroke of lightning. Twenty years later, in 1859, he discovered "Antozone," another form of oxygen, which, however, is as yet known only in such compounds as the peroxyds of sodium and potassium. These results are believed to be as remarkable as almost any in modern chemistry. In 1845 Schönbein invented gun-cotton, the value of which as blasting material is well known to the public. At first it was supposed that the whole system of military warfare would be changed by the discovery of this new agent, but its explosive qualities were found to be uncontrollable in the field. In 1851, a more pacific use was discovered for gun-cotton. Collodion, a solution of gun-cotton in ether, discovered by Maynard of Boston, is found to be the best material to be sensitized for photographic purposes. Schönbein was the author of several treatises on iron and its combinations with oxygen, on physical chemistry, on combustion and on the results of his own discoveries.

Prof. Jean Francis Persoz, of the *Conservatoire des Arts et Metiers*, eminent as a technological chemist and a member of the "Conseil d'Hygienè et de Salubrité de Paris," died at Paris on the 12th of September. Persoz was particularly well versed in the chemistry of dyeing, and held a public function in connection with that art. We hope to have a more extended notice.

Henry F. Fish, one of the original members of the American Pharmaceutical Association, and at one time the Mayor of Waterbury, Connecticut, died in New York in August last. Mr. Fish suffered much during the latter years of his life from a serious disturbance of his digestive organs, often accompanied with severe pain and depression. He wrote several papers for the proceedings of the Association, among which we recollect those on powdered camphor, on conium seed and on coca, the latter rather a compilation.

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